FEBRUARY 1960

THE MAGAZINE OF APPLIED TECHNOLOGY
FOR MEN WHO MANAGE
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FOOD PROCESSING.

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as FDA indicates some modification in policy page 36

FOOD ADDITIVES

. . . a case of runaway enforcement

How do we restore sanity to food safety?

begins page 21

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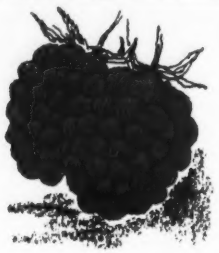
for improvement



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that's interesting

New life for old devil!

The familiar Red Dev which since 1867 has been th distinguishing symbol for W Underwood Company, Wate town, Mass., the nation's old est food canner, has bee given pep pills by Robert Neubauer, well known pack

age designer in the consume products field.

In place of the forme standing figure with out stretched arms, long taperin fingers and the traditiona horns and tail, the new trade mark is a dancing Red Devil happy and well-adjusted waving gaily (see cut) an sporting an uppointed tail.

It's the lease one can do!

Leasing is increasing! Foo processors now constitute 7.3 per cent of total clients o United States Leasing Corp. San Francisco, and accoun for 3.81 per cent of value o equipment owned by the firm but used by industry.

On same general subject, a new study examines leasing pros and cons from standpoint of smaller businessman. In cluded are data tables and charts analyzing comparative costs of leasing and outright and conditional purchase.

Specific situations where it is advantageous to lease – and vice versa — are detailed.

("The Pros and Cons o Equipment Leasing for Small er Manufacturers, Department Stores and Supermarkets," 2 pp, is available from Foun dation for Management Re search, 121 W. Adams St. Chicago 3, Ill.)

6340 on Reader Service Slip.

What's for dinner?

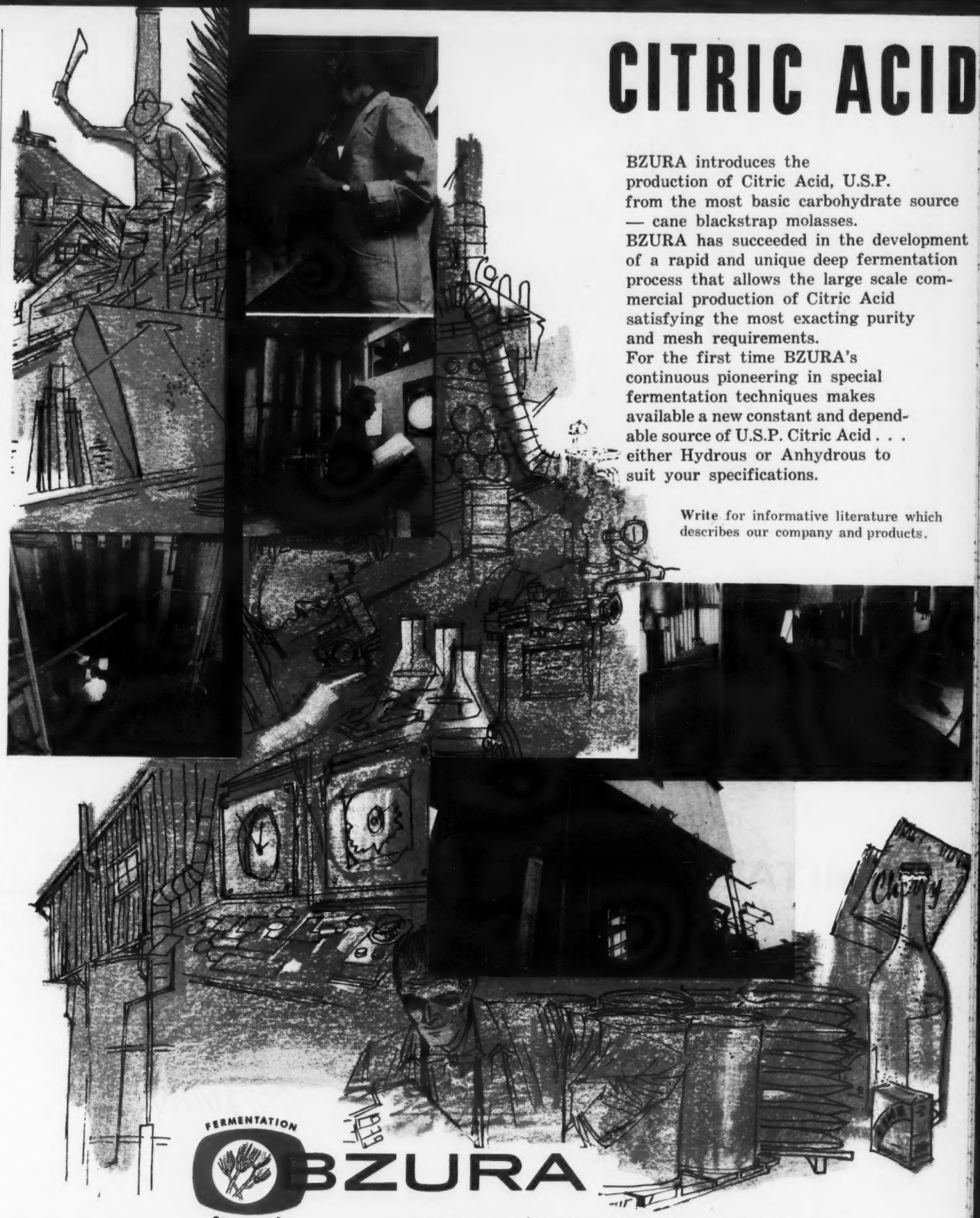
Algae! This may well be delightful outlook for future spacemen if current studies by sanitary engineers at Illinois Institute of Technology's department of Civil Engineering show how to reconvert human wastes into oxygen, food and water.

The engineers' problem is basically to develop a self-sustaining "little world" similar to a tropical-fish acquarium. Key to such a "closed ecological system" is converting the human wastes into forms that will serve as nutrients for plant growth.

Such nutrients would provide food for algae, a basic, edible plant form abundant in protein and carbohydrates and also capable of photosynthesis.

The algae, in turn, would 1) provide a source of food, and 2) act as an oxygen-carbon dioxide converter to provide the spacemen with oxygen for breathing.

For more information on product at right, circle 6341 see information request blank opposite last page.



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Leader and laggard in automation

With products flowing through pipes or being moved by many types of conveyors, with many types of controls and instruments available, it is hard to conceive of a high-volume process today that is not automated.

Yet, there are many segments of the food industry where only stabs at automation have been made; where the surface has only been scratched.

The possibilities of automation are unlimited; direct and indirect savings in processing costs can help to widen the narrow margin of profit.

No other segment of industry lends itself to automation like the production of foods.

FOOD PROCESSING will continue to report on this major trend in future issues.

Frank J. Bonney
ASSOCIATE EDITOR

THE MAGAZINE OF APPLIED TECHNOLOGY
FOR MEN WHO MANAGE

FOOD PROCESSING

FEBRUARY 1960
VOL. 21 NO. 2

CIRCULATION OVER 39,000

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(Food Processing Preview)

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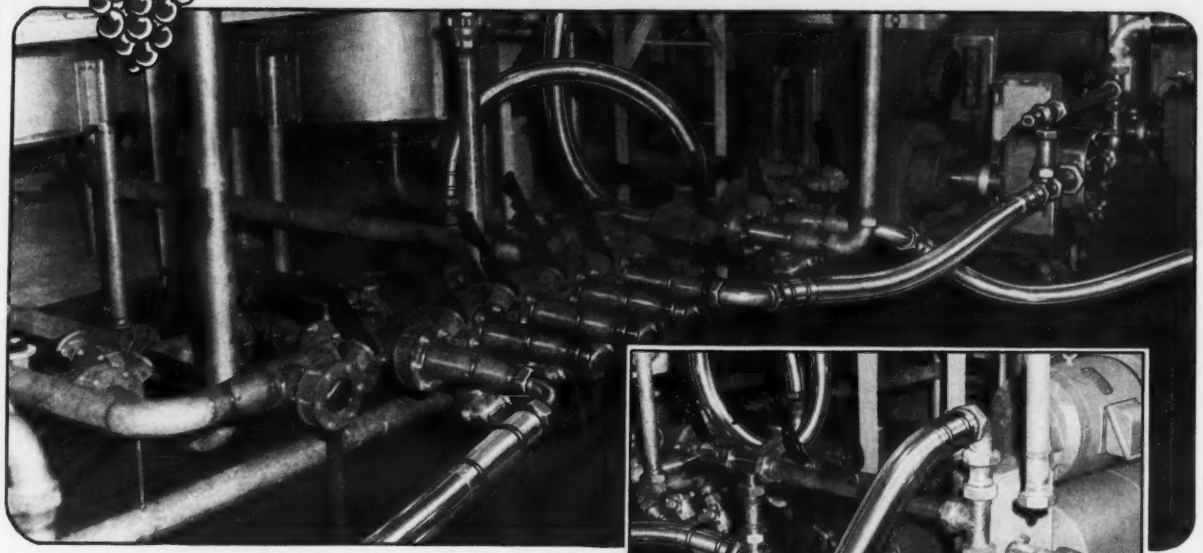
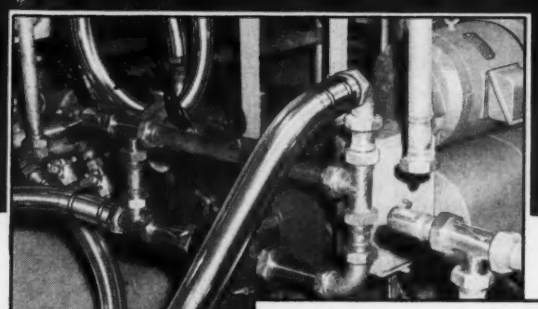
Grape Juice Processor finds

NEW WAYS TO CUT COSTS





Close-up of positive pump in main illustration shows flexibility of Tygon hose, facilitating fast, easy set-ups with a minimum of fittings.

. . . thanks to TYGON® Food and Beverage Hose

Glass-clear, flexible, non-toxic Tygon Food and Beverage Hose (Formulation B44-3) has reduced costs for canners, packers and bottlers of all sizes. In addition to conventional applications, The A. F. Murch Company, Paw Paw, Michigan, processor of grape juice concentrate, has used Tygon's unique combination of advantages in unusual ways to get even greater savings.

For example, alert Murch production men took advantage of Tygon's flexibility and ease of coupling to put wheeled platforms under the positive pumps used to transfer juice between process equipment and storage tanks. Now, with Tygon Food and Beverage Hose on both vacuum and discharge sides of the pumps, change-over is a quick and easy process of uncoupling Tygon lines, rolling the pump a short distance and re-coupling Tygon to the proper fittings. Time required? Much less than with rigid pipe. Added benefits: fewer pumps needed, and visual inspection and control of flow afforded by Tygon's clarity.

Wherever liquid or semi-liquid foods or beverages are transmitted, chances are that Tygon Food and Beverage Hose, Formulation B44-3*, can handle the job more conveniently and at lower cost.

*For processed milk and milk products use Formulation B 44-4.

86-G

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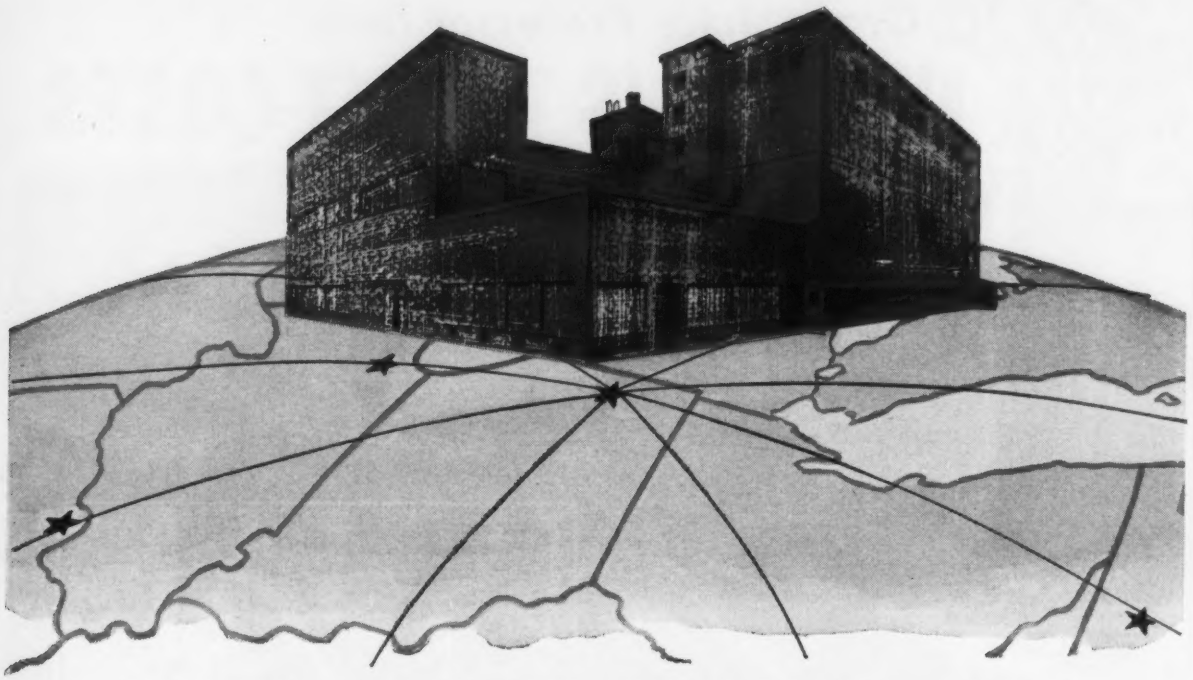

MILES...CLOSER TO YOUR PLANT

new basic source of citric acid U.S.P. is centrally located

Whatever you're looking for in citric acid . . . superb purity, swift service, or a reliable source . . . there are good reasons for getting better acquainted with Miles Chemical Company in the near future.

First of all, Miles citric acid U.S.P. is produced at a convenient Midwest location (Elkhart, Indiana). Rail and truck service in any direction . . . in *your* direction . . . is remarkably fast. The expanded plant capacity at Miles assures an abundant, ever-ready supply of citric acid which can be started to your receiving dock or siding within hours after your order is placed.

What's more, Miles citric acid is exceptionally pure. Years ago Miles started its own production of citric to fill its needs in producing pharmaceuticals. So Miles pioneered a unique deep fermentation process to yield a product meeting the most rigorous purity and mesh specifications.

By purchasing Miles citric acid you, too, can take advantage of this rigorous control. *We would like to talk with you about supplying your requirements and specifications.* A Miles Chemical representative can be in touch with you within a few days after we receive your inquiry. Please write.

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First dried corn in instant form . . .

. . . is cooked and served in minutes, yet is said to have better flavor than conventional dried corn that must be soaked and simmered for over an hr. higher food value than conventional canned corn when 2/3 cup of new precooked product is boiled in cup of water with ¾ cup of milk added. Product also is excellent for corn pudding, fritters, pancakes, ham and corn royal, etc. Product of Martin H. Cope Company, Rheems, Pa.

Saucy new ketchup kap . . .

. . . has shorter cap flange, less thickness in the cap liner than standard Alcoa ketchup cap (left). Result is price as much as 12 per cent below that of standard Alcoa caps with same high product protection. New caps' lighter weight allows additional savings in transportation costs. Roll-on application method, using Alcoa sealing machinery, remains same as at present.

(Short-Flange Flavor-Lok aluminum closure, available in 28mm and 31mm sizes, is development of Aluminum Company of America, 1501 Alcoa Bldg., Pittsburgh 19, Pa.)
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PRODUCTS AND PACKAGES

This Month's Best . . .

Thermoformed trays seal while they sell . . .

. . . combining almost total product visibility with adequate moisture protection for the caramel corn contents. Now used by Veri-Fine Foods Inc. of Chicago, package consists of an 8¼ by 6 by 1¾ in. 10-mil thermoformed tray and a 7½-mil lid — both made of Plax Corporation's biaxially oriented "Polyflex" polystyrene sheet. Lid is mechanically locked and heat sealed with a serrated edge for maximum resistance to water-vapor transmission over periods up to 12 wk. Current production, using semi-automatic sealing units, is at 12-15 per min rate, though planned automatic sealer will up output to 40 filled and sealed trays per min.

(Thermoformed trays and lids are supplied by Plastic Packaging Corporation, Leominster, Mass.)
6347 on Reader Service Slip.

(Semi-automatic heat sealers in use at Veri-Fine Foods are manufactured by Anderson Tool Company, Ludlow, Mass.)
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. . . also providing a rigid, rugged container for line of fudges produced by Stevens Candy Kitchens, Inc., Chicago. Tray is thermoformed from Plax Corporation's white "Polyflex" sheet, 15 mils thick, while cover is clear, transparent five-mil "Polyflex." Unique, wedge-shaped key locks secure cover, permit repeated opening and closing.

(Thermoformed trays and lids are supplied by Paper Package Company, 1036 N. Capitol Ave., Indianapolis, Ind.)
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Novel merchandising angles . . .

. . . literal and figurative, give practical advantages and sales appeal to new packaging for assorted chocolates by Claeys Candy, Inc., South Bend, Ind. Hexagon-shaped shipper, of two-piece telescoping design, augments attention-getting qualities of trapezoid-shaped individual packages — also saves transport space. Carton is ready for display when lid is removed (after cutting tape around bottom) and trapezoidal back poster is folded backward.

(Shipping-display container and candy packages are developments of Stone Container Corporation, 4200 W. 42nd Pl., Chicago 32, Ill.)
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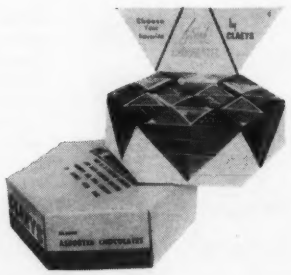
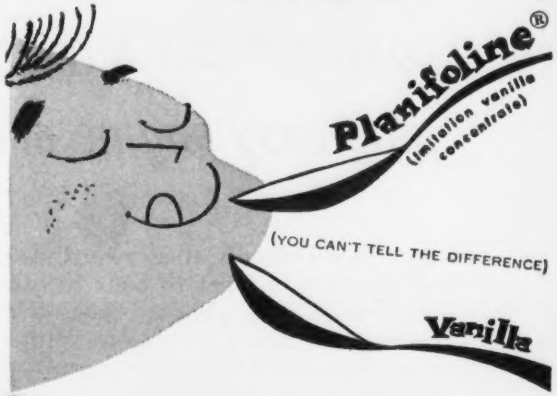


New as 1960 . . .

. . . from the inside out, Heinz Baby Foods feature completely revamped recipes, packages, package sizes, labels. All five special-process cereals "mix" instantly with milk or baby formula, maintain a uniformly smooth texture throughout the entire feeding period. All are vitamin- and mineral-fortified. From the packaging aspect, an unprinted shell package with tight-wrap label replaces the former printed carton — eliminating sifting of cereal from cartons in transit or in stores. Solid white backgrounds, with color identification bands across top section of front panel, replace former solid color cartons. Instead of traditional Heinz baby drawing, a baby photograph appears on front label panel.

Make the vanilla
TASTE TEST



Vanilla bean costs are climbing . . . Planifoline (from plant extractions only) is today's quality-economy answer to your vanilla formulations . . . no artificial color added.

Make the COST TEST

Make the taste test . . . the cost test . . . and you'll decide on Planifoline . . . available in one to 10-fold concentrates, oleoresins, and imitation vanilla sugars of varied strengths.

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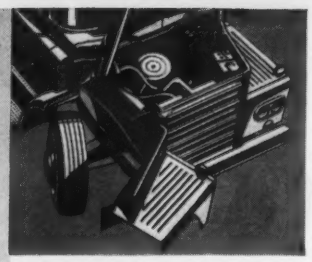
Only Dodge offers you compact cab-forward design plus easy engine access

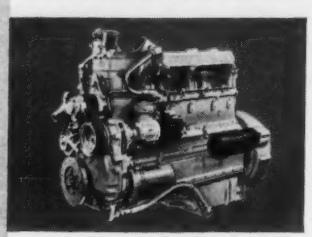
This new Dodge Cab-Forward measures only 89¾ inches from bumper to back of cab. Yet getting to the engine is as easy as opening a door. You can swing out either fender with a simple pull of a latch, then walk right up to the most accessible engine of any truck on the road.

It's easiest to handle, too. Compact cab-forward design makes it far more maneuverable in close quarters than a conventional long-hood truck of comparable wheelbase. And all this without the added cost and bother of a cab you must "tilt" to service the engine.

New Dodge Cab-Forwards are available from 15,000 lbs. to 53,000 lbs. G.V.W. In addition, Dodge offers a wide range of conventional models: stakes, tractors, pick-ups, panels and forward-control chassis. Phone or visit your Dodge dealer for complete details.



SERVI-SWING FENDERS will have you asking "why didn't someone have this idea before?" Now, for the first time in a Cab-Forward truck, you can enjoy the benefits of short-hood compactness plus unmatched access to the engine and its components!



DIESEL ENGINES BY CUMMINS . . . new gas V-8's by Dodge; choose the power plant best suited to your kind of hauling! All drive-line components are "Job-Rated" to insure performance that is efficient, thrifty and dependable.

DODGE CAB-FORWARDS are pacesetters in driver comfort and safety. Standard cab features include electric wipers, driver-adjustable hand-brake lever and five-way ventilation. Cab is flexibly mounted at three points to reduce transfer of stress, twist and shock from the chassis.

DEPEND ON **DODGE** TO SAVE YOU MONEY IN **TRUCKS**

A PRODUCT OF CHRYSLER CORPORATION

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plants companies personalities

Kitchens of Sara Lee, Inc., officially opened its 110,000-sq-ft, one-story, $4 million "dream bakery" plant on Chicago's northwest side on December 16, 1959. Although

already three times the size of the previous Sara Lee plant, the new building will be augmented on March 1 with a new 30,000-sq-ft addition.

In a further expansion of its Flavor Division, **International Flavors & Fragrances Inc.** will coordinate flavor activities at Elizabeth, N.J. divisional headquarters for North America, South America and certain parts of the Far East. In these areas, IFF operates six flavor manufacturing plants.

McGlumphy

van Mameren

Newly appointed general manager of the IFF Flavor Division is **Henri van Mameren,** recently general manager of a subsidiary in Brussels, Belgium. **Dr. James H. McGlumphy,** associated with the firm for more than 25 yr, has been named technical director in charge of research, manufacturing and product control.

Swift and Company, last major meat packer to move offices from Chicago's stockyards, will join Armour, Libby and Wilson in locating headquarters in downtown Chicago late in 1960 or early in 1961. Company will occupy eight floors of a 24-story structure at LaSalle and Jackson. Aggregate 20-yr rental will be more than $20 million.

food regulations

FOOD PROCESSING campaigns for

Two Years' Extension of Additives Law Deadline

To restore sanity to food safety, our lead article (page 21) recommends that Congress immediately pass three amendments to the Food Additives Law. The first is that the effective date of the law for additives in use prior to passage of the law be extended two years' to March 6, 1962.

The other two amendments recommended have for their objective restoring scientific judgment in the administration of the Food Additives Law.

Unless Congress takes action to extend the date of the law, it becomes fully effective this March 6. Thereafter, the use of an additive is illegal unless specifically approved by the FDA or unless granted an extension of time for filing a formal petition.

It should be noted that a substance which is used or becomes an ingredient of a food is not an additive in the legal sense if it is generally recognized as safe or has prior sanction by FDA or by Meat Inspection Division of USDA.

Any requests for an extension of food additive clearances from HEW-FDA will have to include:

(1) The name and chemical composition of the food additive for which extension is granted.

(2) The uses for which extension is requested and what the intended physical and technical effect of the additive is in such foods.

(3) The amounts of the food additive expected to remain in the foods.

(4) Why a food additive regulation has not been requested, if no request has been made.

(5) Evidences that uses of the food additives were recognized prior to January 1, 1958.

Requests and supporting data for time extensions should be filed with the Commissioner by February 1. While requests received after February 1 will not be ignored, FDA officials emphasize the importance to all concerned of meeting the deadline.

This will give FDA time to act before the law goes into effect on March 6 and to publish its decisions on extensions.

Extends deadline for 7 food colors to April 6

Existing certified batches of seven food colors originally ordered to be taken off the market, deadline last month, can now be used until April 6. The colors getting FDA reprieve are FD&C Orange Nos. 1 and 2, Red No. 32, and Yellow Nos. 1, 3, and 4, and all batches of FD&C Red No. 1 that do not comply with specifications for that color established July 16, 1959.

At the same time the extension was granted, FDA denied industry requests for a public hearing on the government's proposal of October 21 to prohibit use of existing stocks.

The April extension date was set to allow time for those interested to file petitions for judicial review. FDA said that most of the objections filed to its certificate withdrawal order present legal questions which could not be resolved by a public hearing.

On October 21, 1959, FDA published a proposal which banned the use of existing stocks of the seven colors.

(Continued on next page)

3 good reasons

why leading food processors select DAY equipment

1. for top operating efficiency; highest quality of product, lowest production costs
2. for sanitary construction and ease of clean-up between batches
3. for excellence of design and manufacture—providing long, trouble-free service; minimum maintenance

DAY RIBBON BLENDERS and MIXERS

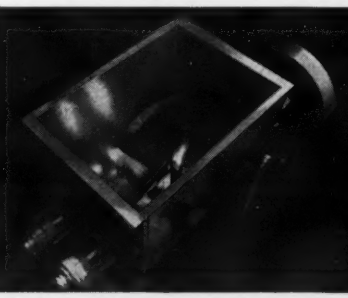
give fast, efficient blending and mixing of heavy-bodied powders, pastes, semi-pastes, granular or liquid materials. Available in a wide range of tank and agitator designs. Capacities from 7.5 to 3850 gallons.

Used for: Flavored beverages; salt; spices; milk powder; dextrine; starch products; gelatin; tomato products; cake mixes; chocolate and cocoa; puddings; cereals; animal feeds; meat products and sauces; doughnut flours, etc.

DAY RO-BALL SIFTERS

with super-active ball cleaners, lead the field for fast, thorough sifting of wet or dry ingredients. Models for 2, 3, 4, or 5 separations. Often combined with DAY regulating feed hoppers and material conveying equipment.

Used for: Flours; sugar; salt; dry milk; cocoa; corn products; starch products; seasoning; cottonseed & soybean meal; semolina; candy; prepared mixes; chewing gum; powdered eggs; soup products; animal feeds; tobacco, etc.



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are made in various capacities and models to meet every requirement for light, medium and heavy-duty kneading and mixing. They give fast, thorough dispersions and are the choice of leading food processors.

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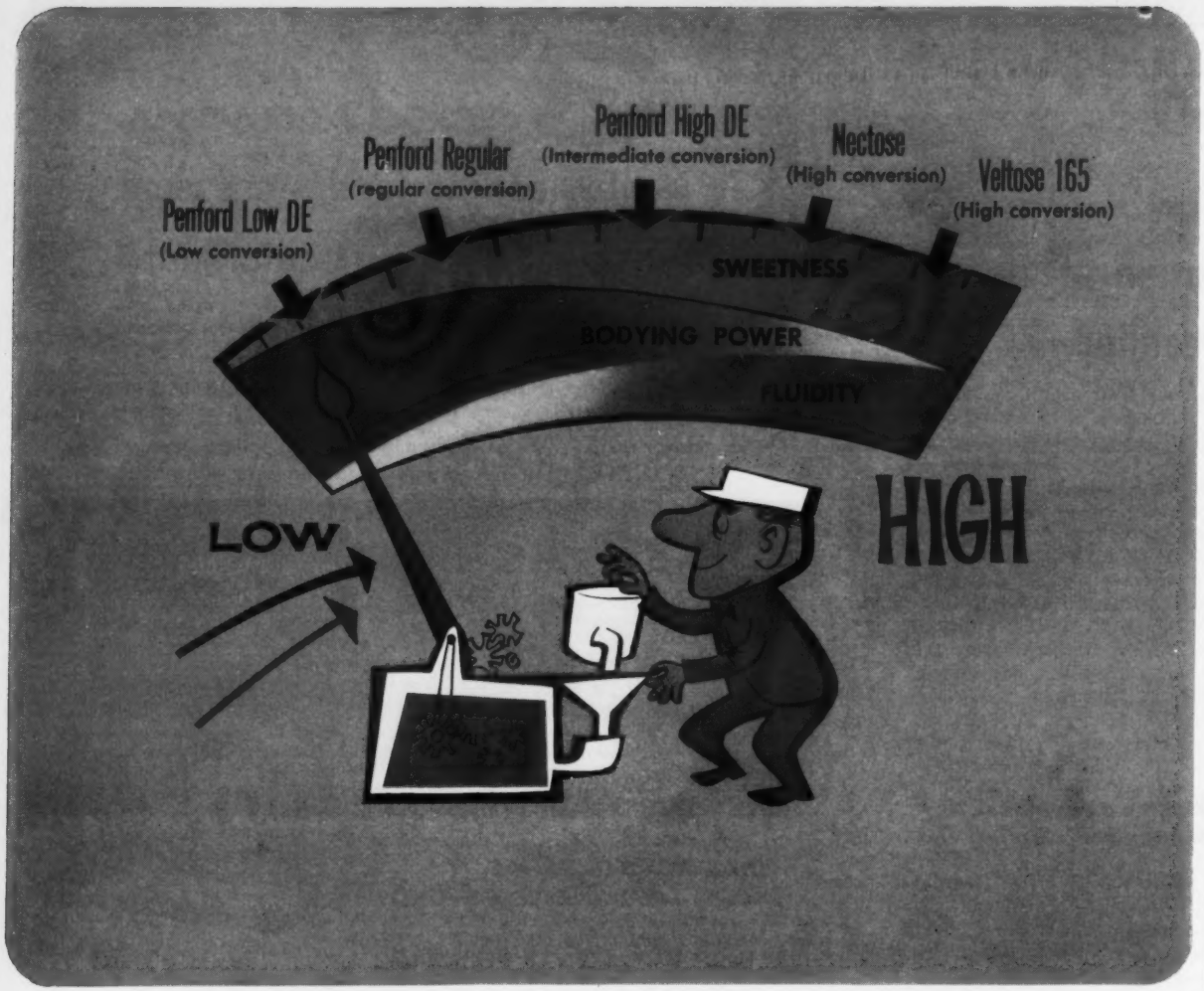

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food regulations

(*Continued from preceding page*)

This followed an order which removed these colors from FDA's approved list. Before the October 21 proposal, delisting actions did not prohibit sale or continued use of batches of colors previously certified as safe by FDA.

Perhaps by the April 6 deadline, Congress will have moved far enough along in its consideration of a modernized color additives amendment to give the color industry hope that at least this problem won't come up again.

Carbon black, charcoal get one year extension

In a precedent-setting action, FDA has granted the first time-extension under the Food Additives Law.

Use of carbon black and charcoal as food colorings may be continued for one year beyond the law's March 6 deadline.

These colorings proposed on a "safe" list in December, 1958, were removed from the final list issued in November, 1959. According to the FDA, scientific experts commenting on the list said there was not enough information on the food-grade colorings to rule out possible toxic impurities.

"There are many different types and grades of carbon black and charcoal used in industrial products which are not suitable for food purposes," FDA said.

Now the candy industry, which uses these colorings, has an additional year to study and develop specifications for suitable food grades of carbon black and charcoal. However, it is expected that before the year is up specifications will be completed and a petition for a tolerance filed under the Food Additives Law.

Meantime, industry will be able to use a maximum of four-tenths of one per cent of carbon black or charcoal in formulas for such products as licorice candy or black jelly beans. The charcoal must comply with specifications

given in the national Formulary, Tenth Edition. Carbon black must be the variety produced by the "impingement" or "channel" process.

FDA said it believed that no undue risk to the public health would be incurred by the time extension.

Asks judgment to prevent naming of sodium nitrite, nitrate as additives

It is expected that FDA will ask for dismissal of a complaint which alleges that the agency exceeded its authority in declaring a substance to be a food additive under the Food Additives Amendment.

The complaint, first of its kind, asked a district court (Wash. D. C.) for a declaratory judgment to prevent the naming of sodium nitrite and nitrate as additives.

According to the complainant, Los Angeles Smoking and Curing Corp., nitrate and nitrites are recognized as safe under the conditions of intended use.

Earlier the corporation had asked FDA whether these substances are food additives when used in the smoking and curing of fish in amounts below the 200 parts per million allowed on certain meat products.

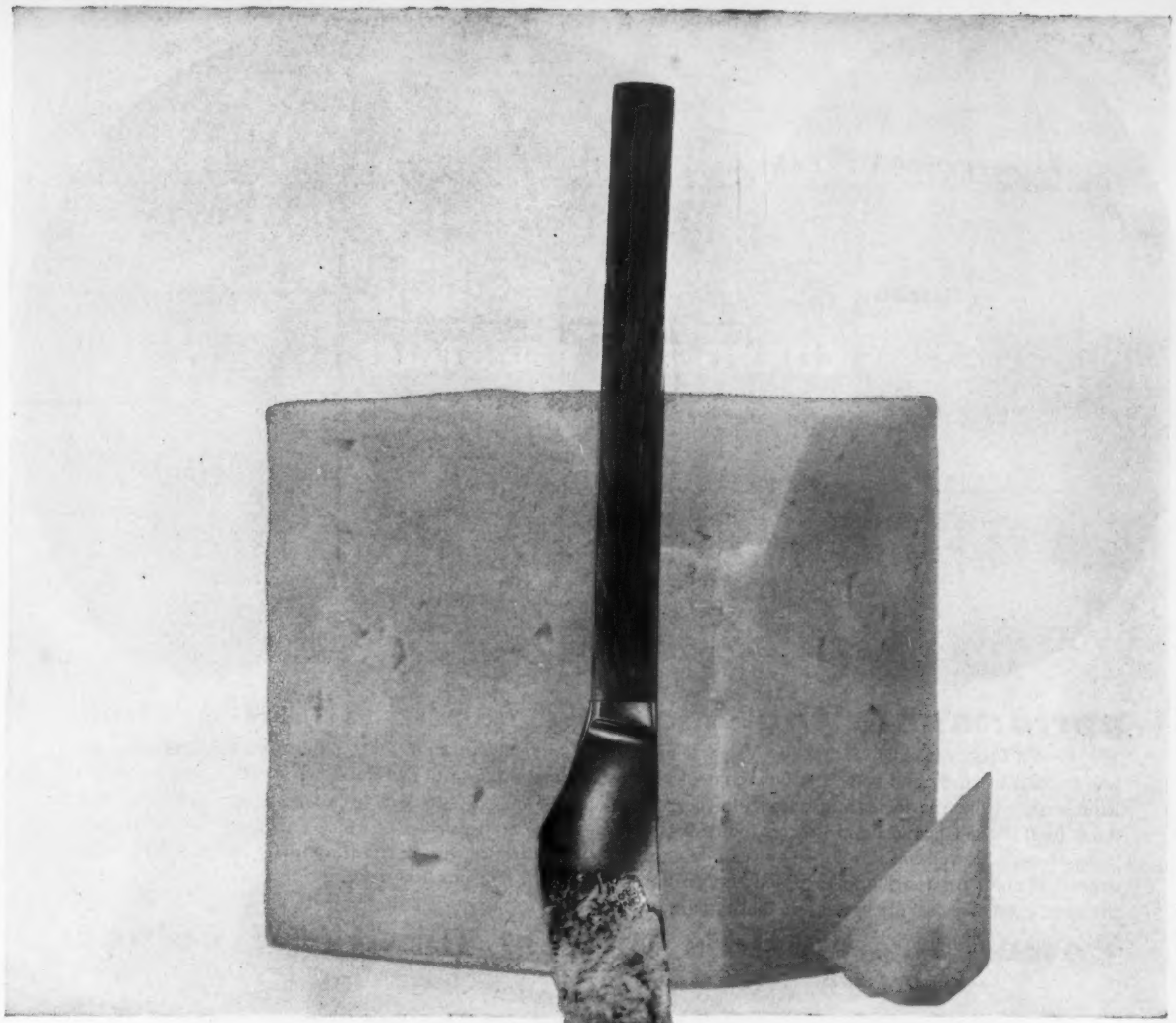
FDA answered then that these substances are food additives under the stated conditions of use and the firm must therefore file a petition for a tolerance.

Educational programs on chemical food additives

Traditionally conservative state agricultural colleges may be joining those who recognize the immediate need for communication of accurate information on chemicals in foods.

The University of Vermont College of Agriculture and Home Economics has named a 14-man committee to "pull together all of the available information on insecticides,

(*Continued on next page*)



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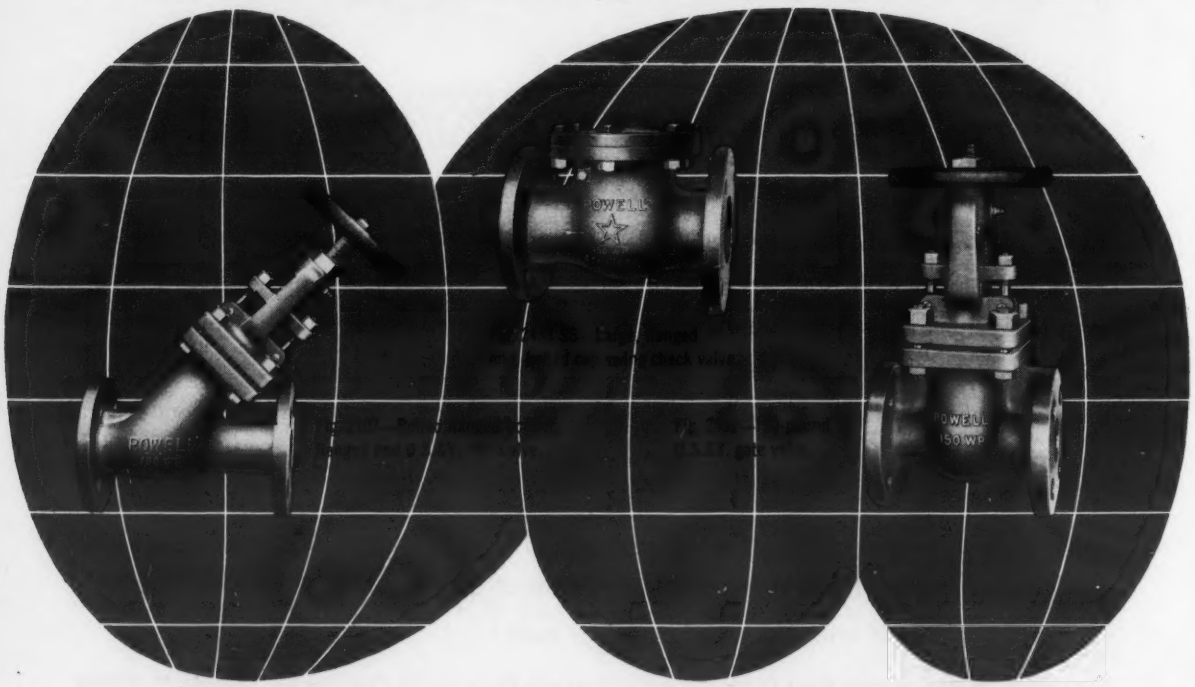

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(*Continued from preceding page*)

pesticides and food additives so as to keep fully informed on use and effect of these chemicals on food used in Vermont."

The committee is composed of members of the College of Agriculture, the College of Medicine, the State Department of Agriculture and the State Department of Health.

The group will work with state agencies involved in the residue problem, will conduct educational programs in the press, on radio and television, and will work with the Vermont Extension Service in a series of planned educational meetings with county farm leaders.

In announcing the new project, Dean Paul R. Miller pointed to the responsibility of a college to see that producers of foods are given the very best information on how to use agricultural chemicals to produce food of the highest quality.

Dean Miller continued:

"This residue program is a dynamic thing . . . There are new chemicals coming on the market, new tests being made . . ."

He made it clear that the committee has been established as a source and clearing house of information and that the college commends rather than condemns the chemical industry and the Food and Drug Administration.

Proposes 37 additives safe for animal feeds

A proposed "safe" list of 37 trace minerals added to animal feeds has been issued by FDA. (See list on page xx.) Substances added to animal feeds as well as those for human foods are covered by the Food Additives Amendment.

(*Continued on page 17*)

For more information on product at right, circle 6358 . . . see information request blank opposite last page.

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CERTIFIED FOOD *Colors*

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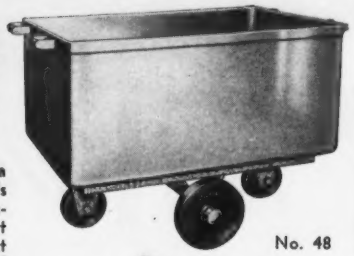

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All Stainless Steel seamless construction. Lightweight, Sanitary Efficiency designed for heavy duty.

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Standard, Tilting, straight-sided or tapered, with or without chimes. 8 to 20 Quart capacities. Finest construction features.

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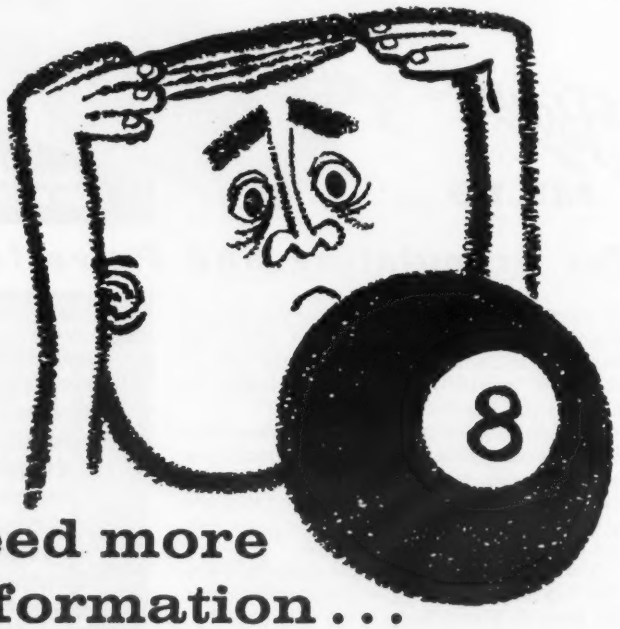

need more information . . .

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food regulations

(*Continued from page* 14)

Among the compounds included are those which are sources of cobalt, copper, iodine, iron, manganese, and zinc. The proposal also details limits on amounts to be used and conditions of use.

Under the proposal, cobalt would be restricted to use as a feed supplement for ruminants — cattle, sheep, and goats. Zinc would be restricted to use as a feed supplement for swine and poultry only. These restrictions, the agency said, are based on data indicating that cobalt and zinc have value only for the animals specified. No such restrictions are proposed for the other minerals because they are believed to have value for all animals.

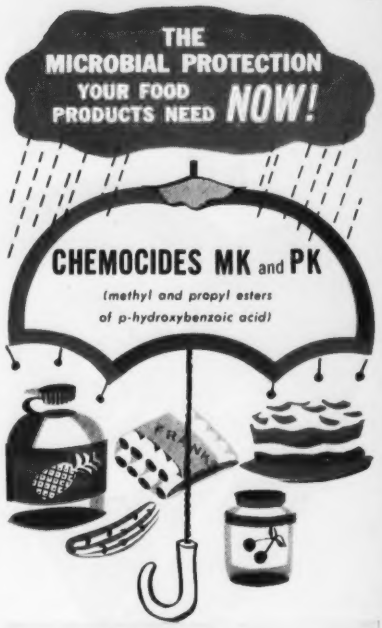
As with other safe lists, this one must undergo consideration by "qualified experts" throughout the country before it becomes final — thereby exempting these minerals "generally recognized as safe" from the Food Additives Amendment.

In commenting on the proposed list, FDA said that while it recognizes the practice of adding mineral salts to certain feed mixtures, it has been scientifically demonstrated that harmful effects can result from feeding excessive amounts of these compounds.

The limitations set forth, therefore, are intended to define safe levels for the total ration to prevent possible harm to animals.

Aminotriazole — a weedkiller, not an insecticide

The foldout chart in January FOOD PROCESSING, showing one million dots to illustrate one part per million, referred to aminotriazole as an insecticide. Aminotriazole is not an insecticide, it is a weedkiller. Correction was made before all the charts were printed, so the error does not appear on all of them.



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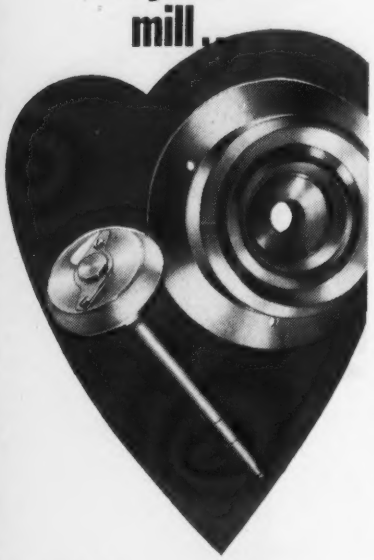

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food regulations

Certifies 5 billion lbs poultry in '59

Nearly 5 billion pounds of poultry products were certified by USDA as wholesome and healthful food during 1959, the first year of full operation of the Poultry Products Inspection Act.

At the end of the year 740 processing plants, serviced by 1,600 USDA inspectors, were operating under Federal inspection — both mandatory inspection and USDA's 30-year old voluntary poultry inspection program, which is still available to those who wish to pay for it and are not eligible for mandatory inspection.

The law requires all poultry processing plants engaged in interstate commerce to operate under USDA regulation.

According to USDA many processing plants now restricted to intrastate commerce plan to apply for inspection service this year.

STANDARDS

Ice Cream: Standards have been further delayed pending FDA's decision on whether two emulsifiers are to be included in the final order. Under the Food Additives Amendment, a petition has been filed for clearance for two tween emulsifiers. FDA's decision on the petition will then be reflected in the final standards order.

Artificially Sweetened Jellies and Jams: Objections have been filed and a public hearing requested. It is expected that a public hearing will be announced shortly.

Whipped Cream and Whipped Table Cream: Action is being delayed on a proposed standard for aerated cream products pending FDA study on the comments received.

Next Month: List of 150 naturally derived seasonings and flavorings found safe for use in food.

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TRUCK SIZE
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. . . roll easily on wide tread 4" composition wheels.

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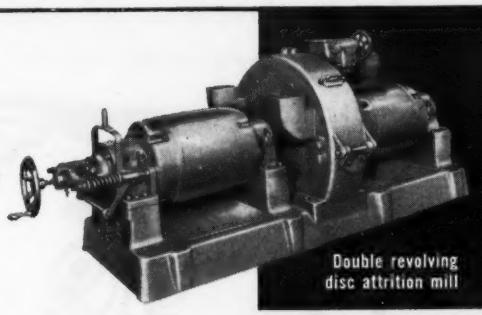

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Plants, Companies, Personalities

The Griffith Laboratories, Inc.

Chicago, has promoted Dr. Louis Sair from director of research to technical director. Dr. Sair has been in chage of Griffith Laboratories research since 1946.

Vacu-dry Company

Oakland, Calif., announces appointment of Col. William D. Jackson, USA (Ret.) as consultant on all of the firm's dealings with the US Armed Forces and other government agencies. Vacu-dry has been for

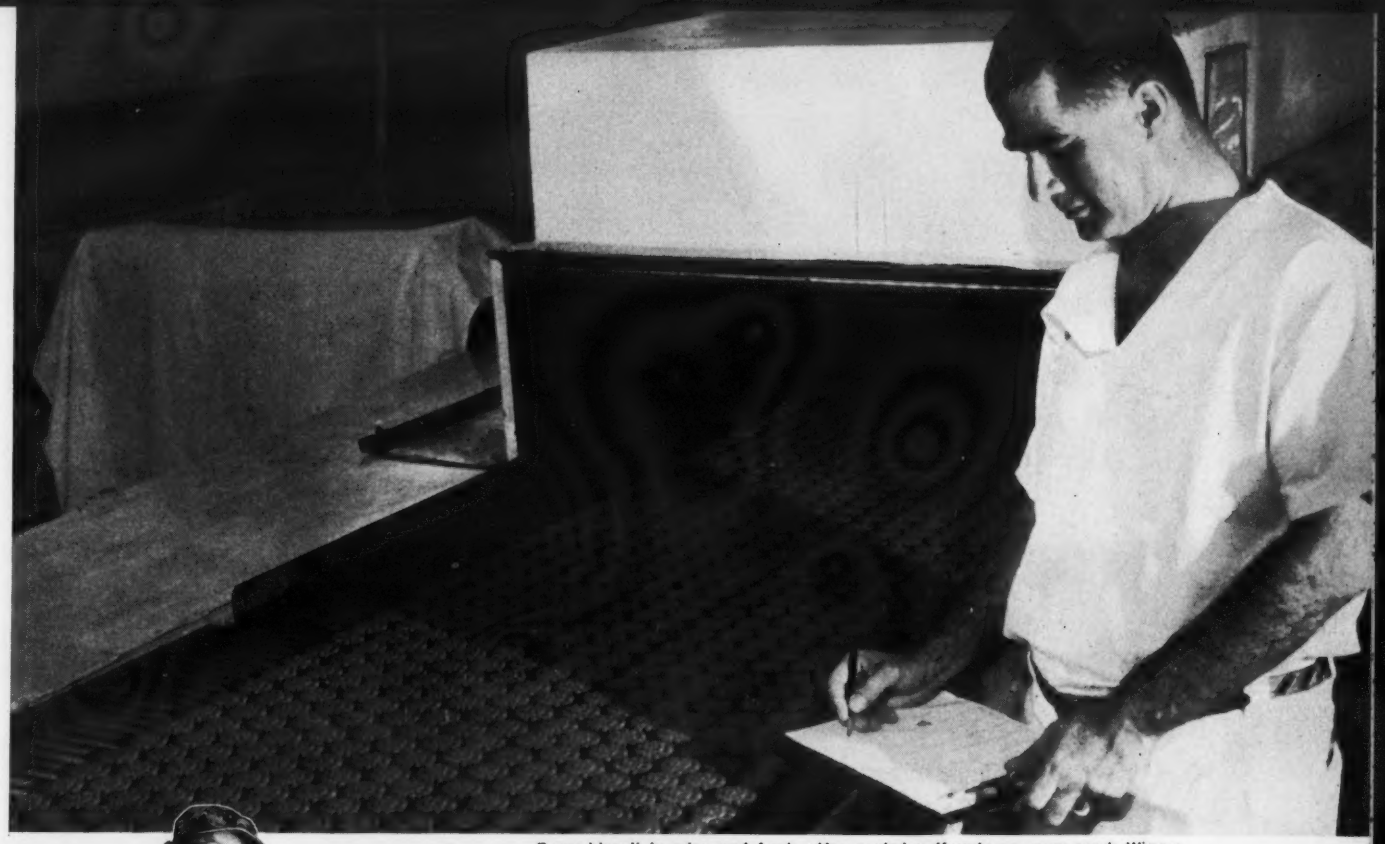
many years an important supplier of fruits and other dehydrated foods to the services, and has played a leading part in the government program of adapting or developing dehydrated foods for military use.

Col. Jackson's concluding assignments with the Army were as chief of Research and Development, Office of The Quartermaster General, Washington, D. C. (1952-57), and commanding officer, Los Angeles Region, Military Subsistence Supply Agency (1957-59).

Cargill, Incorporated

will erect a 16-floor "Cargill Building" as part of a $20 million downtown-Minneapolis building project, which also will include huge motel, 1000-car parking ramp, glass-domed arcade-restaurant-plaza. Completion is expected in 1962.

For more information on product at right, circle 6364 see information request blank opposite last page.



Every biscuit is crisp and fresh when cooled uniformly on open mesh Wissco Belts here at this Toronto bakery. After ten years' operation not one stoppage has been caused by belt failure.

Meet the Image of CF&I. He stands for the high quality of all CF&I steel products, including Wissco Belts.

In food plants...

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"Just before packaging, the biscuits must be cooled. They are passed from the ovens to a post-heat chamber on a 105-foot Wissco conveyor. Here, Wissco's open spiral weave permits gradual cooling of the biscuits from both top and bottom. This proper cooling means each of the millions of cookies we bake every day is tender yet crisp, and consistent in texture."

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World-wide Producer of Quality Milk Products

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Legislation will be required to combat the food additive crisis and . . .

Restore sanity to food safety

HOWARD P. MILLEVILLE, Editor

Runaway enforcement of the Food Additive Law has reduced its stature as a sound piece of legislation to a shambles.

Untimely and ill-considered actions by the government have undermined public confidence in what is actually the world's safest, cleanest, and most diversified food supply.

Actions of HEW Secretary Flemming indicate that he has no interest in the exercise of scientific judgment. He supports with enthusiasm the strictly legal and literal interpretations of the Additives Law established by those at policy level in the FDA.

As a result, the scientific administrators in FDA are forced to take unrealistic positions contrary to their own best judgment . . . contrary to the original intent of the legislators who passed the Food Additives Law.

Certainly, the food industry, without whose support this law would never have passed, did not anticipate that FDA would relinquish the exercise of sound scientific judgment in its administration.

It is therefore obvious that the only remedy is corrective legislation which will spell out more clearly to Secretary Flemming, the FDA policy makers, and their successors the basis for legal administration of a scientific law.

One suggestion (see page 24) that merits serious consideration is that a few words be added to the Delaney clause to read something like ". . . no additive shall be deemed to be safe if it is found to induce cancer when ingested by man or animal *in amounts and under conditions reasonably related to the intended use.*"

In addition, the concept of safety should be clarified.*

The law covering food additives places special emphasis on general recognition of safety based on experience in common use. Safety, like honesty or virtue, is difficult to prove. In practice, as well as in the laboratory, safety is manifested by lack of evident harm.

Yet there are some experts who would demand that every possibility or suspicion of harm, however remote it may be, should be thoroughly explored before reaching an opinion of safety.

There appears to be a reluctance on the part of scientists to pass judgment on the basis of "experience in

Congress should immediately:

1. **Extend to March 6, 1962 the effective date of the Food Additive Law for additives in general use prior to passage of the law;**

2. **Modify the Delaney clause to read: ". . . no additive shall be deemed safe if it is found to induce cancer when ingested by man or animal *in amounts and under conditions reasonably related to the intended use.*"**

3. **Spell out the meaning of "generally recognized as safe" as embracing the concept that experience in common use justifies the scientific experts approving as safe toxicologically insignificant amounts of substances in a food without the necessity for two years' animal feeding studies . . . and provide for the use of scientific advisory committees.**

*Discussion that follows in bold face type here is taken from Dr. Bernard L. Oser's recent address before the American Association for the Advancement of Science.

Restore Sanity

(*Continued from preceding page*)

common use." Laboratory investigators prefer to base their conclusions upon careful comparison of the responses of treated versus untreated groups of animals, under conditions where the variables are controlled and, ideally, limited to a single one. They hesitate to express opinions on the basis of uncontrolled observations, particularly when legal weight is to be given them.

From the shelter of their ivory towers, some scientists reply that responsibility for such decisions should be borne by those closer to the subject in all its aspects. An exaggerated sense of humility of modesty may motivate some scientists to avoid expressing opinions in matters about which they regard themselves as less expert than is implied in the solicitation of their views.

If scientists were to probe into the components of natural foods with the same thoroughness and using the same yardsticks as are currently applied to pesticides and food additives, they would surely find reasons to question the validity of our ordinary concept of safety. (See footnote on page 23 regarding The American Medical Assn's statement on aminotriazole.)

There is a curious inconsistency in the way FDA dismisses the queries of experts concerning the safety of smoked foods under the Food Additives Law.

The components of smoke absorbed by or condensed on the food include substances in minute amounts but sufficient to be lethal or inhibitory to micro-organisms. Some of these have been found to induce cancer, and therefore ought to be excluded under the policy FDA has established in the administration of the Delaney clause.

But FDA says that since smoked foods are generally recognized as safe by the experts, the Delaney clause does not apply.

Thus, in enforcing the Delaney clause, FDA has apparently adopted a double standard: one for "time-honored" components of foodstuffs, and one for relatively new substances defined as food additives.

In any event, to restore sanity to food safety it is imperative that the Congress spell out the legal definition of "generally recognized as safe." It should be acknowledged that experience in common use justifies approving the safety of toxicologically insignificant amounts of substances without the necessity for two years' animal feeding studies.

Such a provision would also restore proper perspective to the administration of the law with respect to the non-intentional additives — those which could possibly migrate into food from packaging materials or processing or handling equipment which the food contacts.

The problems of obtaining responsible judgments from scientific experts would, in our opinion, be aided by use of scientific advisory committees. When scientists of related but differing backgrounds meet, their expression of opinions is bound to be more realistic.

Consider the statutory provisions in the pesticide residue law whereby the Secretary of Health, Education, and Welfare on his own initiative, or any person adversely affected by a decision, may refer a controversial issue to an ad hoc scientific advisory committee composed of experts of diverse professional background and qualified in the subject at issue.

The panel of experts from which the committee is selected is named by the National Academy of Sciences, but the selection of the committee itself is the responsibility of the Secretary, notwithstanding the fact that he is technically a party to the dispute.

Several occasions have arisen since the enactment of the Miller Amendment for review by advisory committees. In each case the Food and Drug Administration has accepted the recommendations resulting from the committee's evaluation of the evidence, even though not legally obliged to do so. Thus the opinions of these ad hoc committees concerning pesticidal residues have come to have the effect of law.

At the time the Food Additives Bill was reported out of committee in the House of Representatives, only one case concerning a pesticide residue tolerance had been referred to an advisory committee.† Opinion among industry representatives was divided as to the merit of this system of review.

Some of the more vocal members of the legal fraternity opposed it on the grounds that the committees were formed unilaterally by one of the parties, namely the Secretary, that there was no opportunity either to test the qualifications of the experts or to cross-examine them, and that the entire process was extra-judicial. Consequently the provision was deleted before the bill reached the floor of Congress.

What the legal fraternity failed to recognize was the value of these scientific advisory committees in removing the scientists from the shelter of their own individual ivory towers. Taking action as a part of a group, a scientist is more likely to properly discharge his responsibility for the enforcement of laws requiring the sound exercise of scientific judgment.

We therefore recommend that the provision for use of ad hoc scientific advisory committees be incorporated in the Food Additives Law along with a clarification of the term "generally recognized as safe."

Another aspect of "generally recognized as safe" needs immediate attention. Lists of such food ingredients are in preparation by the FDA.

Now while FDA insists that from a legal point of view these lists are simply a service to industry, FDA will not concede that anyone else can "generally recognize" . . . and it took them ten months to issue the first list of 182 out of a possible 1800 intentional additives.

Industry considers that the ingredients it has long been using are generally recognized as safe. Until FDA issues more complete safe lists, industry doesn't know which ones will require expensive scientific and legal steps to be in compliance with the Additives Law of 1958.

Considering the utter confusion which exists throughout the industry we further recommend that the effective date of the law for additives in general use prior to the passage of the law be extended a year to March 6, 1962.

There can be no real hazard to the public health in such an extension. FDA had and continues to have the power to deal effectively with any possible known hazard in our food supply . . . and the extension would not apply to new additives.

As a precautionary measure we would agree that for any specific additive the extension may be cancelled by the Secretary of HEW on the basis of evidence that there is in fact danger to the public health.

These suggested amendments should in short order and with the least possible disturbance restore to the Food Additive Law the stature it has lost. •

THE PRICE THEY PAID

Cranberry men will forever celebrate November 9, 1959 as the Day of Black Monday. For it was on that day that the workings of government virtually barricaded sale of a must-buy food when the selling was best.

How deep did Secretary Flemming's pronouncement penetrate public opinion? Deep enough that in the week before Thanksgiving canned cranberry sales were wallowing 79 per cent below the year-ago figure. Deep enough to plunge fresh cranberry sales 83 per cent.

After much expensive patchwork and public relations, the industry had limited the total sauce decline for the entire month of November to about 66 per cent. Continued testing, advertising, and promotion, combined with strong retail support, limited Ocean Spray cranberry sauce sales — barometer of the industry — in the first three weeks of December to a 47 per cent drop from record sales the same period a year ago.

Thus the costly battle back was fought. Public confidence was on the mend — but with the holiday eating splurge nearing its end, the fact remained that cranberry sales were drastically off.

And the fact remained that Ocean Spray, a co-op marketing 75 per cent of the cranberry crop, had proof that not one of its cans shipped to market held any trace of aminotriazole!

†As a result of the committee's recommendations the Food and Drug Administration reversed its original position. The Administration subsequently endorsed the principle of referral to expert scientific committees and included it in the proposed food additives law.

Public confidence in world's safest food supply is being undermined*

BERNARD L. OSER, Ph.D.
President and Director
Food and Drug Research Laboratories, Incorporated

Dr. Oser is by training a biochemist with long experience in the fields of nutrition, food technology, toxicology, and the scientific aspects of food and drug laws. He is a member of the Food Technology Sub-Committee of the Food Protection Committee of the National Research Council. He is Scientific Editor of "Food Drug Cosmetic Law Journal," and Lecturer on Food Regulations at Columbia University's Institute of Nutritional Science.

It was foreseen by those who opposed the inclusion of a specific prohibition of cancer-inducing substances in the Food Additives Amendment — that there would be difficulties in equitable and practicable enforcement of this provision in the present state of scientific knowledge.

Moreover it was believed that such protection against established carcinogens as was necessary and feasible would be assured by administrative action under the broad terms of the law. However, against the advice of FDA and other scientists, Congress adopted a restrictive clause (the so-called Delaney clause) requiring that no regulation be issued for the use of any substance found to induce cancer upon ingestion.

Against this background, controversies have begun in which government agencies, agricultural and industrial organizations, and scientists, have become so involved as to undermine public confidence in what is actually the safest, cleanest, and most diversified food supply in the world.†

The recent furor over the presence of a trace of aminotriazole in cranberries illustrates how the lack of balanced judgment can create unwarranted apprehension and fears in the minds of the public, which competent scientists could have and should have prevented.

There is no question that aminotriazole when fed over long periods, caused thyroid cancer in rats; there is some doubt as to whether it could do so in man.

There is no question that a zero tolerance was set for it under the law, based on the assumption that no safe level can be found for a cancer-inducing substance; there is doubt that no safe level can be found.

There is no question that the government was within its rights and, in fact, obliged to proceed against the adulterated cranberries; however, there is serious doubt as to whether the degree of hazard was commensurate with the action taken.

No scientist aware of the facts will agree that the potential risk, if any, to physical health, was such as to justify creating alarm among consumers and building up a mental block against the legitimate and safe use of chemicals in foods.

In arriving at decisions as to the safety of food additives, scientists are expected to take into consideration the amounts and patterns of consumption of foods by man, as compared with those arbitrarily adopted in animal experiments.

Tolerance levels are established with large margins of safety between doses that produce no harmful effects in animals and the actual use levels in human food. Thus an excess over an established tolerance may, strictly speaking, be illegal, but it is not necessarily hazardous.

It would seem that the processes of law enforcement should be attuned to the real, rather than the technical, significance of alleged crimes.

Repetition of incidents like the cranberry episode can, on the one hand, cause unwarranted mental attitudes regarding the safety of various foods and, on the other, it can develop public mistrust of those who cry "wolf."

As in other walks of life, there are zealous crusaders among scientists whose doubts and prejudices give rise to dire predictions unless corrective laws are passed and rigidly enforced. It is unfortunate that untimely and ill-considered warnings are reported by the press as though founded on scientifically proven facts.

The recent amendments to our food laws give scientists the privilege, if not the duty, to make their voices heard. It behooves them to put aside their traditional reserve and humility, to accord skepticism and hypothesis their proper places in research, and to assume a role of greater responsibility toward attaining scientific equilibrium under practical laws. •

*Based on paper presented at the annual meeting of the American Association for the Advancement of Science, December 30, 1959.

†**Editor's Note:** It points out that if turnips, cabbage and mustard were used by the Pilgrims more than 300 years ago, minute quantities of [aminotriazole-like substances] might have been ingested in their diets.

The editorial further emphasizes that little stress was given to well-documented evidence that [aminotriazole-like substances] are naturally found in vegetables, primarily cabbage, turnips and broccoli, as well as in mustard, or that the antithyroid action is described in current text books of therapy.

Commenting on the suspicion that FDA's action has cast on the use of charcoal — carbon black — as a characteristic coloring for licorice and other confections, the editorial remarked: ". . . the FDA permitted the processors and the users of charcoal in food and candles a three-month [now extended to one year — see Food Regulations, page 11] period of grace to produce evidence that burned toast is harmless."

Scientific judgment missing in FDA's administration of Delaney Clause*

One of objectives of the Food Additive Law was to advance food technology by permitting the use of food additives at safe levels

EDWARD J. MATSON, Ph.D.
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Undoubtedly no section of the Food Additive Law has been more disturbing than the so-called Delaney clause, Section 409 (c) (3) (A).

This clause was added just prior to the passage of the Food Additive Amendment, and operates to limit the discretion of the Food and Drug Administration in acting upon a petition for a food additive. It reads:

"*Provided,* That no additive shall be deemed to be safe if it is found to induce cancer when ingested by man or animal, or if it is found, after tests which are appropriate for the evaluation of the safety of food additives, to induce cancer in man or animal. . . ."

When the bill was enacted it was not generally suspected that this language might be construed in such a way as to limit scientific judgment.

In fact, the Food and Drug Administration expressed the view that the Food Additive Amendment meant the same with or without the Delaney clause. However, subsequent events have shown that the Federal agency has interpreted the law beyond what it appears to mean.

The Delaney clause has in it what lawyers call a *per se* concept. It leaves no room for scientific judgment in that it bars absolutely a substance that has caused cancer when taken orally by man or animal, regardless of the amount required to cause the effect or the length of time necessary to cause it.

I believe experience has shown us that no *per se* law relative to a technical or scientific problem is a good one. No law can so completely spell out how a scientific matter should be regulated that judgment should be completely excluded. For that reason the Delaney clause is bad law.

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Nevertheless it is a law with which we could probably live, because none of us wants cancer anyway, if it were properly interpreted by the Food and Drug Administration.

The phrase "is found to induce cancer when ingested" looks quite straightforward. The words "is found" plainly mean that enough data exist to establish reliably that a substance has really caused cancer in man or animal. Our knowledge of cancer is still so limited that any other basis for calling a substance a cancer-producing agent leaves the scientist deep in confusion.

Granted that cancer is an important disease, granted that we all have a strong emotional reaction toward it. Still we cannot really help meet the problem of cancer by the scientifically impossible requirement which FDA has established based on its interpretation of the Delaney clause.

In effect the FDA now requires that any food additive be proved not to cause cancer before it can be used.

Amend Delaney clause

It is clear that the Delaney clause implies and has been read to mean more than is scientifically possible to accomplish. If there is a feeling that the Delaney clause serves any purpose at all, I believe it must at least be modified promptly to restore perspective.

Let us agree again that our knowledge of cancer and the carcinogenic process is very limited and will remain so until scientists have made many more discoveries which will help us to predict how the process works.

One thing already accepted by most experts in the field is that there truly is a threshhold dose of a carcinogen, below which cancer is not produced in animals. How to convert animal data to apply to human beings is not yet understood, so that we cannot yet predict the threshold dose in man from knowledge of the threshold dose in experimental animals.

Of course, there is a minority view that no such thing as a threshold dose of a carcinogen exists. Professor Druckrey of Germany has the opinion that "the reason why extremely small doses produce no cancer is not that there is a 'threshold dose' but because the necessary induction time becomes longer than the total life span." Person-

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Two Purposes for the Food Additive Law

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"(1) To protect the health of consumers by requiring manufacturers of food additives and food processors to pretest any potentially unsafe substances which are to be added to food; and (2) *to advance food technology by permitting the use of food additives at safe levels.*"

The first purpose is self-evidently desirable. There was unanimous support from both business and the public for a new law which would set forth clearly that the safety of a new food additive must be scientifically established before it is used.

There is some tendency to forget the second purpose of the new law — that food technology is to be advanced by permitting new substances to be used in foods at safe levels. This is no idle purpose. It is essential to our national future.

As we face the population explosion of American cities we see that there is no choice but to process food so that it may be transported long distances and stored for extended periods of time and still retain its nutritive value and its acceptability when it is purchased and used by the consumer.

The enforcement of the food additive law so as to best comply with both purposes — safety for the user and the advancement of food technology — requires judgment of the highest caliber in the regulatory agency. And it can be nothing but the best scientific judgment.

A great danger to the exercise of sound judgment occurs when there is pressure to repudiate the second aim of the food additive law — that is, to enforce the law in such a way that food technology actually no longer advances.

END

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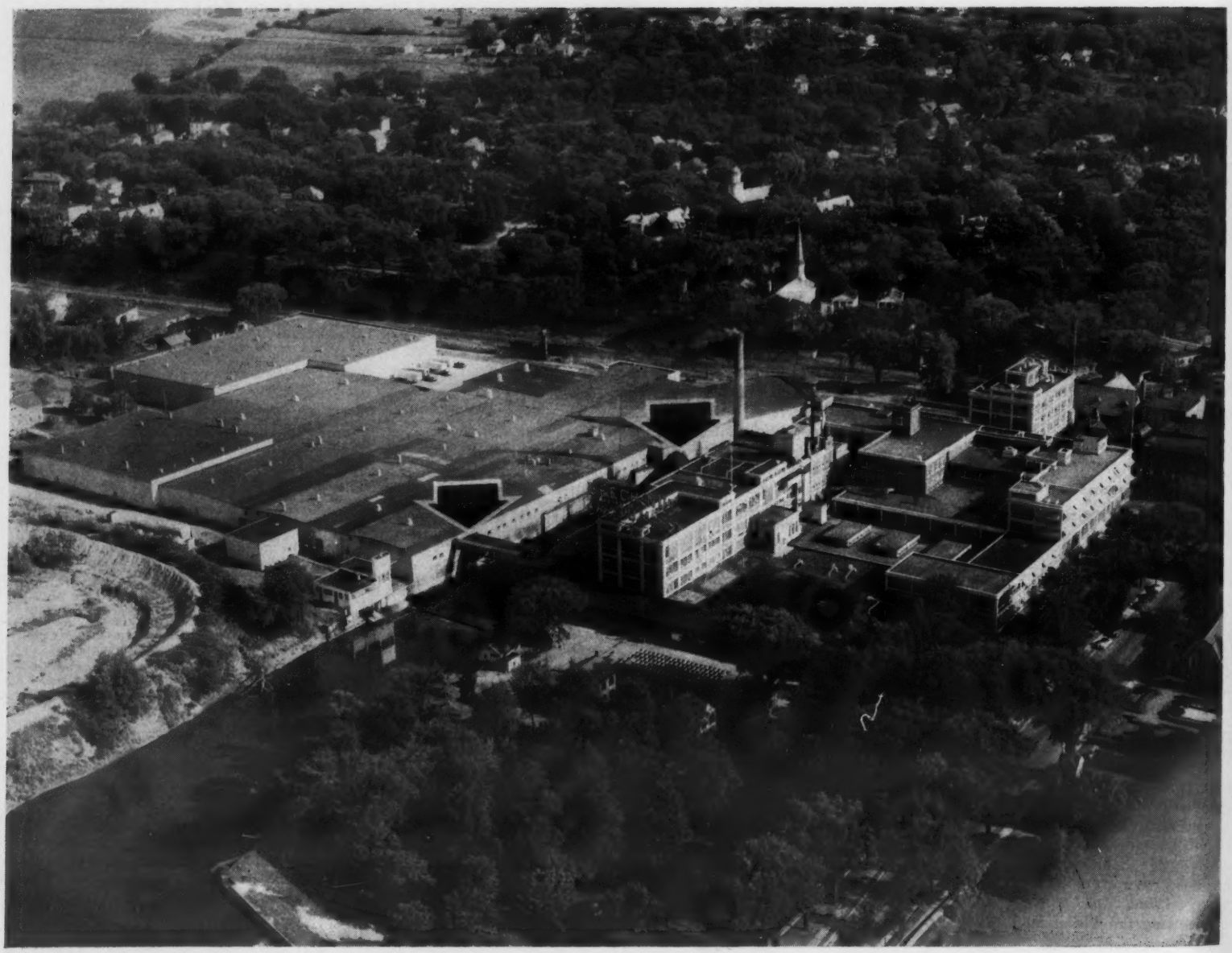
Booming baby-food production forced Beech Nut-Life Savers to make one of two choices . . . add another plant, or

MAKE AVAILABLE SPACE

Package-handling conveyors, connecting key areas in buildings separated by Canajoharie Creek, make optimum use of two narrow, previously heavily congested bridges (arrows) between buildings



NORB LEINEN
Associate Editor

MORE PRODUCTIVE

LIKE most successful companies, Beech Nut-Life Savers long ago outstripped production goals of the early 1950's. One consequence of this success was cramped plant quarters — especially in the Baby Foods Division at the Canajoharie, N.Y., plant.

Added complication was the plant layout itself. The Canajoharie Creek passes between the three buildings in which baby food cartons are handled — glass warehouse, filling room and labeling room.

Two bridges, serving as corridors, connect the warehouse and the labeling room by intersecting at one corner of the filling room. These are the *only* routes between buildings — not only for the dolly "trains" carrying cartoned glass jar empties, but for plant personnel also.

The resultant congestion slowed the over-all operation, and this, in turn, aggravated the congestion. For example, two employees per line did nothing but unload pallets of cartoned empty jars at filling machines — stacking cartons in high, cumbersome piles in the work area. In fact, manual stacking and unstacking of cartons which prevailed throughout the operation was all accomplished in critical areas.

Here's how, without adding another sq ft of plant space, company solved all of these handling headaches.

New system. Over-all method of solution was the installation of a system of package-handling conveyors that connect key plant areas, supplemented by fork lift trucks that handle materials in palletloads.

However, the improvement in handling actually begins at the unloading dock — formerly entirely tied up by eight freight cars manually unloaded. A dock extension allows five truck trailers to be parked next to the cars.

Palletloads of cartoned empty glass jars are unloaded and handled via fork lift truck to a storage area, or directly to one of the five conveyor loading stations in the glass warehouse.

(The conveyor network consists of five lines — three for Strained and two for Junior foods.)

At each of the stations, a warehouse operator lifts three or four cases at a time from palletload and places cases in an unshingling device that shuffles the cartons onto the moving line one-at-a-time, while also correctly aligning them with the conveyor belt.

By preventing a stack of three or four cartons from toppling onto the line, the shingler triples or betters the number of cases that the operator can efficiently feed onto his line at one time.

(*Continued on next page*)

Bridge No. 2, where empty cartons are conveyed from filling room to labeling room. Note uncluttered corridor

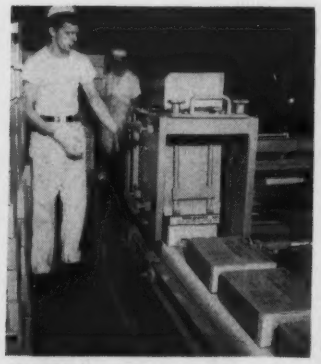
Before new system, this was typical traffic tie-up in one of the two bridge corridors

Lines in Bridge No. 1 connect glass warehouse to filling room. Slider pan belts were preferred over roller conveyors because of sanitation aspect. Anything dropping from cartons is caught in the metal pan, or "trough," within which the belt slides, and is dropped into a container at the end

The five conveyor lines, each carrying cartons of empty jars in an upside-down position, with the top carton-flaps closed, leave the glass warehouse and run along one wall of Bridge No. 1 — the corridor between the warehouse and the filling room.

Kept fully loaded throughout the work shift, these particular lines, of the slider-pan type, are used as metering belts and move at 30-40 fpm.

Filling room. As cases enter filling room, they travel over lines elevated 12 ft above floor level, crossing the room at this height and transferring from slider pan lines onto gravity lines, then to a speed-up belt from which they drop down to the unscramblers.

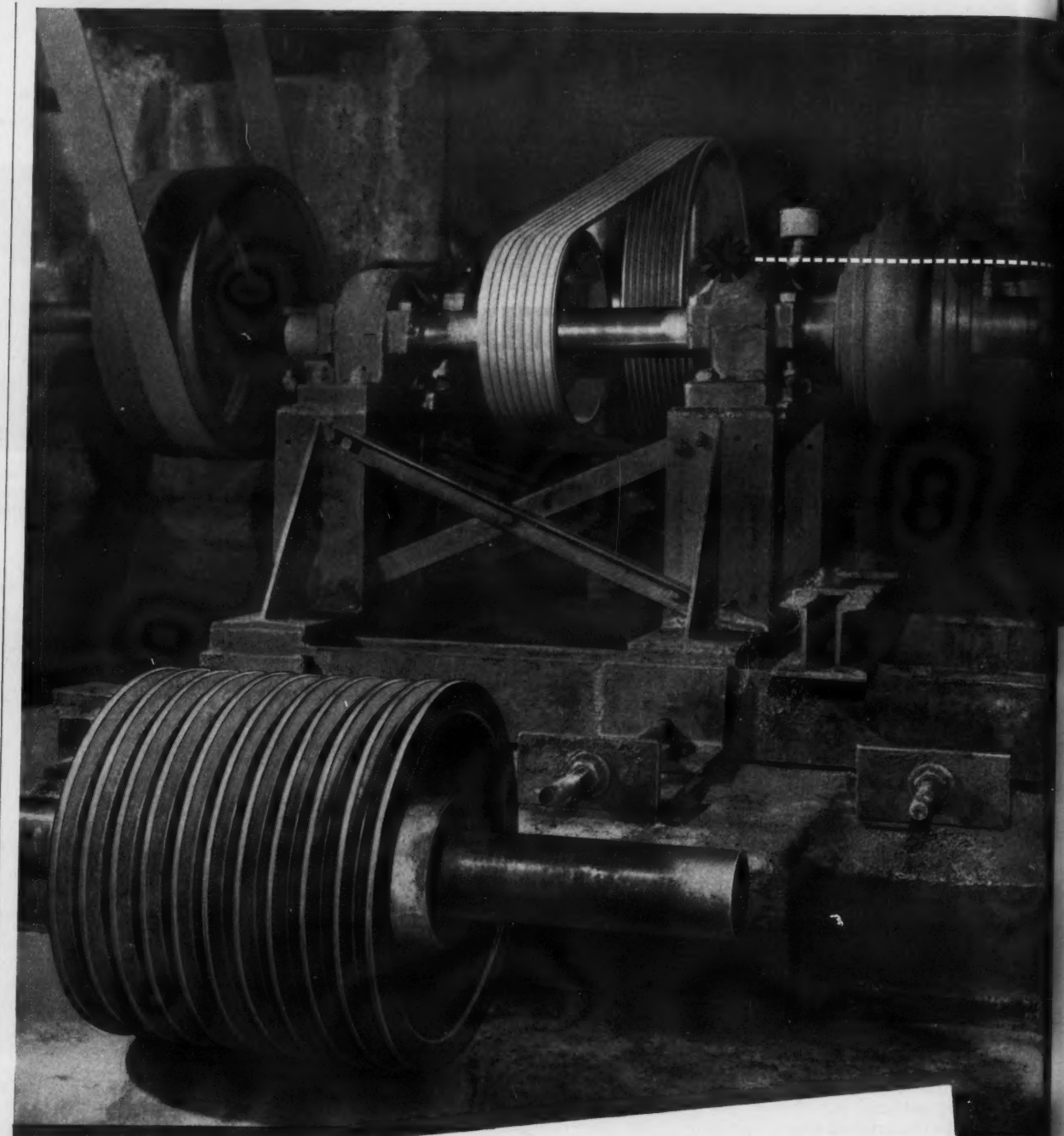


"Unshingling" device accepts load of 3-4 cartons at time, shuffles them correctly aligned onto moving belt one-at-a-time

Cases enter this section back-to-back, separating later as they pass over the feed belt, which is actuated by the unscrambler as it signals its demand for cases.

If the flow is interrupted momentarily, this separation allows controls either at filling machine or on the lines time to respond.

After an unscrambling machine has accepted the jars, an automatic belt-driven carton turnover device quickly carries the empty cartons up and out of filling machine area, sending them onto conveyors that cross the room at near-ceiling height, after which they drop to floor level to enter Bridge No. 2 — the passageway between filling

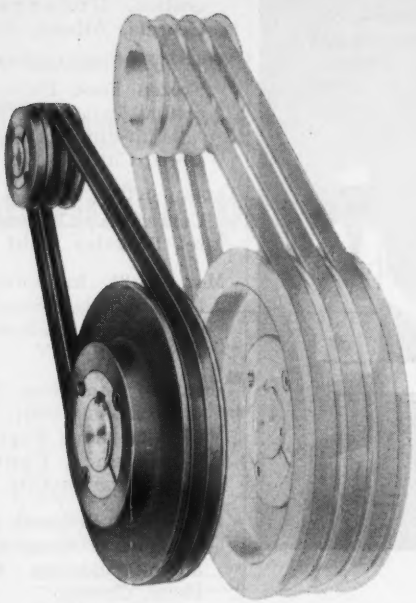


HIGH CAPACITY LOW COST PROVED BY DYNA-V

Here is a Dyna-V Drive on a paper mill line shaft. The 8-groove, 5-V Dyna-V driver sheave replaces the 10-groove D-section sheave shown in foreground. Dyna-V delivers the same power — in a far more compact drive — with a $477 difference in price — and big future savings in belt replacement cost!

Dyna V

NEW MONEY-SAVING IDEA IN V-BELT DRIVES!



Dyna-V compared with big-groove drive for same hp. Dyna-V is capable of handling 3 times as much hp in the same space! Dyna-V Drives are available for capacities from 1 to 1500 hp.

The day of big-groove sheaves and belts is passing. The new idea of compact V-belt drives—Dyna-V—introduced by Dodge just a few short months ago, is taking the country by storm. Thousands of Dyna-V Drives are at work in industry everywhere, carrying their loads easily, dependably, and proving their ability to *deliver more horsepower per dollar!*

Dyna-V utilizes the full performance possibilities of today's great synthetic fibers for belts—and modern metals for sheaves. Narrow belt top widths team up with narrow sheave grooves to create Dyna-V compactness. Narrow grooves reduce face width—save weight. Costs are lowered. Smaller diameter sheaves and shorter center distances multiply savings. With Dyna-V you cut costs on most initial installations and economize on belt replacements as well. In medium and high hp ranges these savings can be as much as 30%.

Dyna-V Sheaves decrease shaft overhang—increase bearing life. And Dyna-V Belts possess all premium qualities. Conditions requiring oil, heat, moisture resistance or static conductivity are met by Dyna-V's one grade—the finest. Ask your local Dodge Distributor. Or write us for Dyna-V Bulletin.

CALL THE TRANSMISSIONEER — your local Dodge Distributor. Factory trained by Dodge, he can give you valuable help on new, cost-saving methods. Look under "Dodge Transmissioneer" in the *white* pages of your telephone directory, or in the yellow pages under "Power Transmission Machinery".

DODGE of Mishawaka, Ind.

DODGE MANUFACTURING CORPORATION, 2400 UNION STREET, MISHAWAKA, INDIANA

6366 on Reader Service Slip.

and labeling rooms.

Since the cases now are traveling right-side-up, with top flaps open, they require more space than when being conveyed from the glass warehouse to filling room.

Therefore, instead of a single tier of five lines as in Bridge No. 1, two tiers (three inside, two outside) border one wall of Bridge No. 2. Flow rate averages 30 cases per min on each of the five conveying lines.

Labeling area. Before entering the labeling room, cartons pass through a surge area where rate of carton flow is adjusted to match labeling production input.

Here, workers along each of the five conveyor lines see to it that cartons continue to feed into the labeling room, even though cases from any one of the filling lines may have stopped feeding into the surge area or remove cases from the line if the labeling line goes down.

The lines running from this area are timed so that when completely full they meter the average required number of cases for the labeling line. Since they run only when the labeling line reserve is calling for boxes, no special signaling or control devices are necessary in the surge area.

After leaving surge area, four conveyor lines rise to 14 ft and pass along ceiling of label room, then drop down to terminate at labelers.

The feeding of cases from the belt conveyor to a gravity conveyor line attached at right angles to the belt line is controlled by a brake belt.

The brake belt is actuated by a wire-triggered time-delay switch located in the center of the gravity line.

The gravity line provides a working reserve and feeds an escapement device which controls feed to the packer.

(Slider-pan conveyors, belt conveyors, roller conveyors, rod chutes, unshingling devices, metering belts and limit switches constituting new case-handling system at Beech Nut-Life Savers plant, Canajoharie, N. Y., were designed, manufactured and installed by Lamson Corporation, 303 Lamson St., Syracuse, N.Y.)

6367 on Reader Service Slip.

Product of the combined resources of Reliance Electric and Engineering Company and its Master and Reeves Divisions

RELIANCE ELECTRIC AND ENGINEERING CO.

DEPT. 672A, CLEVELAND 17, OHIO

Canadian Division: Toronto, Ontario

Sales Offices and Distributors in Principal Cities

Duty Master A-c. Motors, Master Gearmotors, Reeves Drives, V★S Drives, Super 'T' D-c. Motors, Generators, Controls and Engineered Drive Systems.

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conventions and exhibits

Feb. 12-14. Institute of American Poultry Industries, fact-finding conference and exposition, Municipal Auditorium, Kansas City, Mo.

Feb. 23-24. Eighth annual National Dairy Engineering Conference, Kellogg Center, Michigan State University, East Lansing, Mich.

Feb. 29-*Mar.* 3. Fourteenth National Conference on Handling Perishable Agricultural Commodities, Purdue University, Lafayette, Indiana.

Mar. 3-4. Second "Better Foods for Better Nutrition Conference," sponsored by Divisions of Foods and Nutrition and Food Processing of University of Georgia, Center for Continuing Education, University of Georgia, Athens, Ga.

Mar. 6-9. National Assn. of Frozen Food Packers, 19th annual exposition and annual meeting, Conrad Hilton Hotel, Chicago, Ill.

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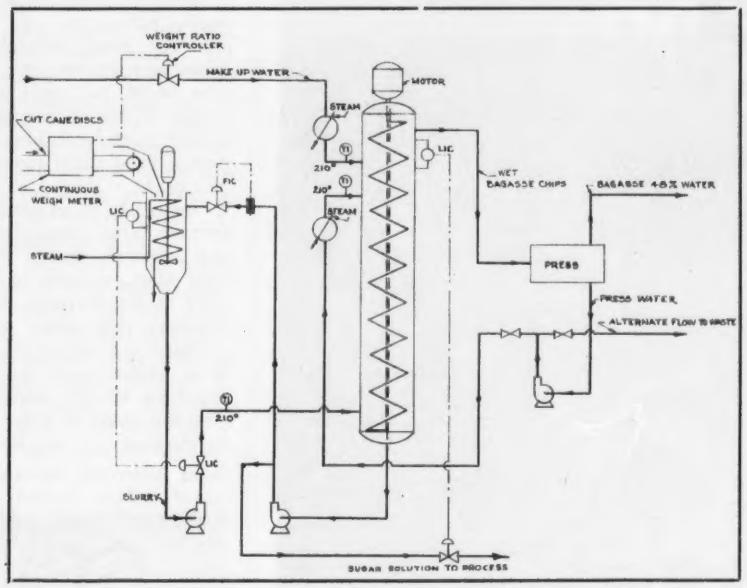
Apr. 19-21. Research and Development Associates, 14th annual meeting, Congress Hotel, Chicago.

Apr. 25-28. National Assn. of Refrigerated Warehouses, annual meeting, held in conjunction with Merchandise Division of American Warehousemen's Assn., Americana Hotel, Bal Harbour, Florida.

Apr. 27-29. Pennsylvania Manufacturing Confectioner's Assn., 14th annual production conference, Marshall College and Hotel Brunswick, Lancaster, Pa.



Cut cane, crossing continuous weigh-meter sets rate of feed for process. Flow throughout is automatically controlled. Cane chips or discs are heated and mixed into slurry using hot sugar extract diverted from outlet flow. Slurry is pumped into tower counter-current to water flow at rate controlled by level of make-up stock in slurry tank.

Liquids for diffusion, fresh make-up water and press-discharge water from extracted chips, enter tower near top after being heated to 210 F by steam. Flow of combined make-up water and press water is automatically controlled in proportion to weight of cane by continuous weigh-meter on conveyor.

Rate at which sugar liquor produced leaves bottom of diffuser is controlled to maintain proper liquid level in tower

Semi-commercial plant

Demonstrates economical feasibility of diffusion process for sugar cane

- **Higher yield — 6 to 8 per cent**
- **Higher purity — 1 to 3 percentage points better**
- **Lower initial investment — 25 per cent**

Method may have other applications

Comparison of Results
from pilot plant operating parallel to conventional milling operation

Cane Analysis	Diffusion	Milling
Wt % Sucrose	14.0	14.0
Wt % Fibre	14.0	14.0
Extraction Yield — %	96.0	91.0
Purity — %	86.7	85.0
Bagasse Moisture — %	48.0	48.0
Water Requirements — Wt % of Cane		
Fresh Water	25.0	25.0
Recirculated press water	78.0	
Analysis — Wt % of Cane		
Sucrose	13.4	12.7
Impurities	2.1	2.3
Water	79.9	79.4
Total	95.4	94.4
Total recovered "sugar in bag" — %	94.0	88.4

AFTER two seasons of operation on semi-commercial scale at Fellsmere, Fla., diffusion technique for extracting sugar from cane has been proven successful. Other possible applications, such as oil extracting are foreseen for the process.

Technique consists of continuously treating discs or chips of sugar cane with hot water in a vertical tower. Sugar is transferred from cells of cane to water by osmosis and dialysis, or diffusion.

Conventional method extracts sugar by squeezing or crushing cane to release juice. As much as 10 per cent of available sucrose is thereby lost and purity is seldom over 85 per cent.

With diffusion process, there is no physical degradation of cane. Consequently, liquor purity is one to three percentage points better than milled cane of like quality. Further, total sucrose extraction is increased.

At Florida installation, pilot plant ran parallel with conventional mill. Cane feedstock was supplied from yard at random and the extract was pumped directly to processing house.

In all tests conducted, sugar extract from diffusion process was consistently higher than juice from mechanical operation. (See table of comparison below/left, below/right.)

(*Continued on next page*)

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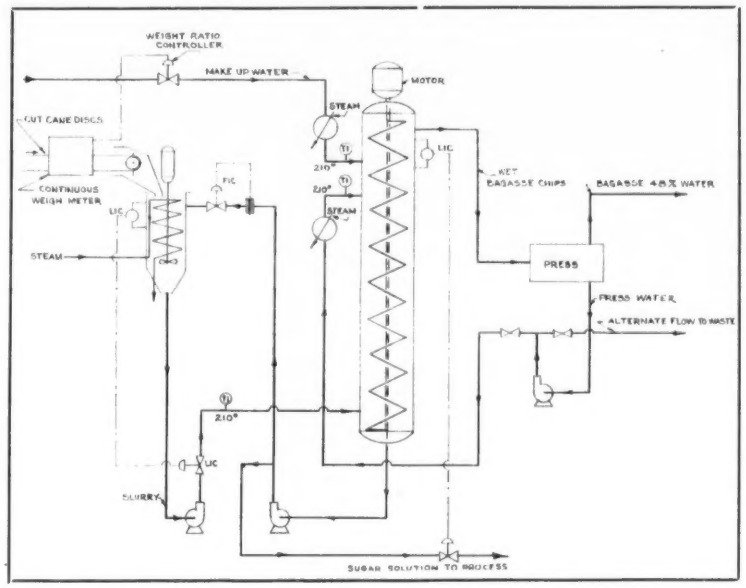

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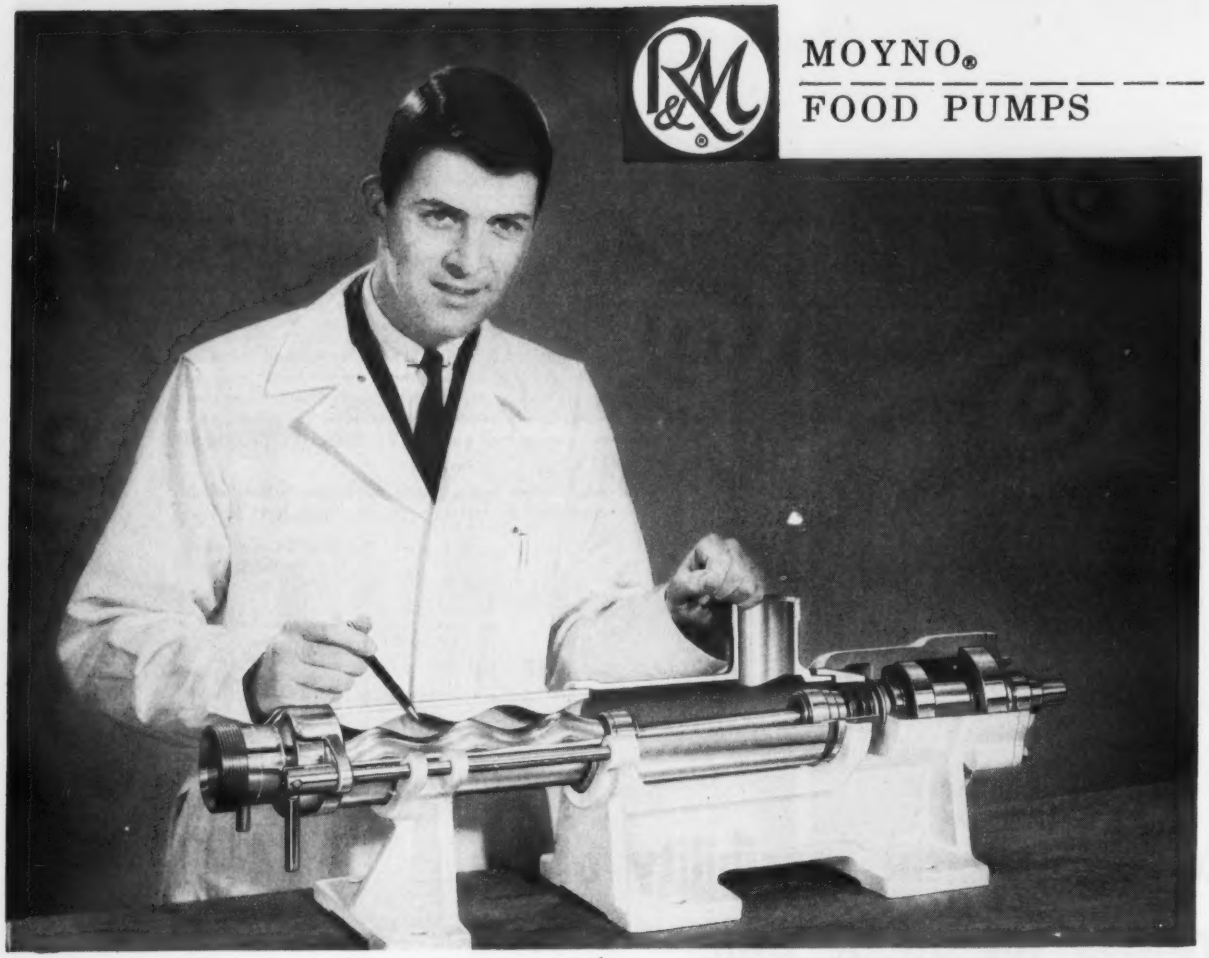
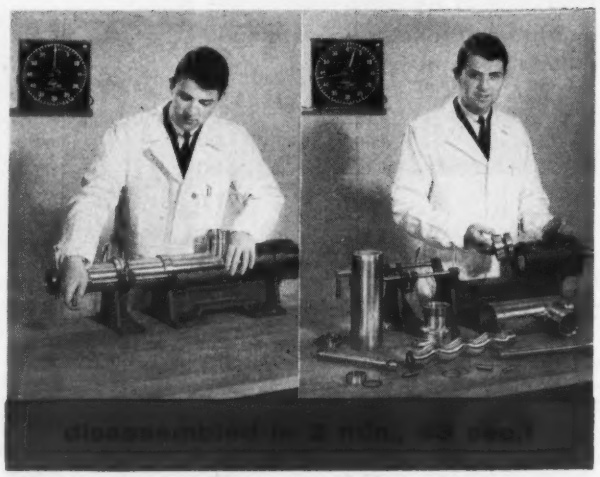


MOYNO®... *the "Quick-to-clean"* Food Pump that even *Pumps Suspended Solids!*

A MOYNO Food Pump can easily be disassembled in 2 minutes and 43 seconds for thorough, effective cleaning and be back on duty in minutes. MOYNOS eliminate long, costly cleanups that rob production time. Foods stay pure too, because MOYNO's smooth internal contours won't collect particles where bacteria might thrive, and bearing lubricant is completely isolated from pumping compartment to prevent contamination.

Any food product that will move through a pipe—from cider to lumpy potato salad—can be pumped with a MOYNO. The *"progressing cavity"* principle that distinguishes MOYNO from all other pumps explains this remarkable capability. The cutaway model above shows the screw-like, reversible rotor that revolves in a double-threaded stator to create these progressing cavities. Material flows smoothly and uniformly, without pulsation, aeration, agitation or disintegration. All wettable parts are stainless steel—or stator may also be synthetic rubber, odorless bakelite or other material, depending on service requirements. If needed, off-the-shelf replacement parts are always immediately available.

To chop cleaning costs and keep *all* foods moving through your plant, learn more about MOYNO by writing today for Bulletin 34 FP



ROBBINS & MYERS, INC.

motors, household fans, Propellair industrial fans, hoists, Moyno industrial pumps

SPRINGFIELD, OHIO • BRANTFORD, ONTARIO

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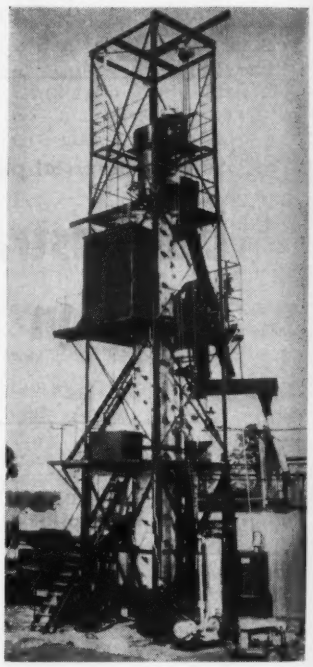
Diffusion Process

(*Continued from preceding page*)

Results from pilot plant show extraction of 96 per cent of total available sucrose is common and extraction of 98 per cent not unusual. Higher extraction at higher purity combines to increase final yield from 6 to 8 per cent.

Operation of process is automatic and controlled from one central point. Preparatory step consists of feeding cane stalks through cutter to produce thin discs or chips.

Chips are conveyed on belt from cutter over continuous weighing device which keeps running total of cane feeding to process — an innovation



Semi-commercial plant where first successful continuous diffusion process was accomplished. Installation needs no building and very little space in comparison to conventional milling plant

in cane sugar manufacturing — and also controls water ratio as shown in diagram. Chips are then mixed with hot sugar liquor to form slurry which is pumped to tower.

Entering diffusion tower near bottom, solid material is picked up by a slowly revolving vertical scroll of

unique design which moves it upward, counter-current to down-flow of liquid. Make-up water and recirculated press water enter tower near top.

Incoming hot water extracts sugar from chips and becomes concentrated as it flows down in tower. Liquor leaves tower at approximately same concentration as that of mill juice; is pumped to process or recirculated to slurry make-up tank.

Solids reach top of tower exhausted of sucrose but containing about 85 per cent moisture. Chips are mechanically discharged from diffuser and continuously pressed to produce bagasse of less than 48 per cent moisture or to render it dry enough for fuel.

Continuous diffusion process can reduce capital outlay by 25 per cent and extraction costs by more than 10 per cent.

Process has high on-stream operating efficiency; needs less operating personnel and maintenance than conventional milling system.

(Chemetron Continuous Diffusion Process is available to industry through licensing arrangements with Chemetron Corporation, 840 N. Michigan Ave., Chicago 11, Illinois.)
6370 on Reader Service Slip.

(Complete engineering and installation services for the process are offered by The J. G. White Engineering Corporation, 80 Broad St., New York 4, N. Y.)
6371 on Reader Service Slip.

". . . and the first guy that says 'That's how the cookie crumbles' gets a bust in the snoot!"

Morton '999' Salt is one ingredient that never varies in quality

Quality-conscious food processors, canners and packers from coast to coast are using Morton '999' Salt because it is the one ingredient you can always depend on for unvarying high quality. In fact, the constant quality of '999' Salt has become the standard of the food industry. With Morton '999' Salt you insure a cleaner, more uniform flavor in all of your processed foods.

Morton '999' is an economical premium-grade salt entirely free from bitter calcium and magnesium compounds that can distort flavor and downgrade product. Morton '999' is always 99.9% clean, pure sodium chloride, exceptionally low in the trace metals copper and iron.

'999' is available everywhere—accept no substitute. Morton '999' is the highest purity salt commercially available anywhere in the United States. '999' quality never varies from shipment to shipment, whether you buy it in bulk for direct salting, or in tablets made to your own specifications—either straight or blended with other flavoring agents. Send for complete information today!

Please send me more information about Morton '999' Salt

Name_____ (Please Print)
Title_____
Company_____
Address_____
City_____ Zone_____ State_____

MORTON SALT COMPANY
INDUSTRIAL DIVISION
Dept. FP-2, 110 N. Wacker Drive, Chicago 6, Illinois

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24 HOURS A DAY

A Better Processed Food for you with Clinton Products from corn

corn syrups • corn starches
Dextrose • Refined corn oil
Lactic Acid

See your Clinton salesman today.

CLINTON TECHNICAL SERVICE is freely available upon request.

CLINTON

CLINTON CORN PROCESSING COMPANY, CLINTON, IOWA

6391 on Reader Service Slip.

40 trillion lb of food per year

People on earth require 40 trillion pounds of food between harvests. Although an even larger quantity is produced, a considerable amount never benefits mankind because foods begin to deteriorate shortly after harvest, gathering or slaughter.

From early times, man has studied and worked on ways and means to preserve his food supply. Modern elements of food preservation are the theme of a book by Norman W. Desrosier, Ph.D.

After several introductory chapters, book presents the following chapters on techniques of food preservation: refrigerated storage of perishable commodities; principles of food freezing; principles of food preservation by drying and principles of food preservation by canning.

There are also chapters on: principles of food preservation by fermentation and pickling; preservation of food as sugar concentrates; preservation of food with chemical additives and preservation of food with ionizing radiations.

Subjects are illustrated with numerous drawings, photographs, graphs and tables.

Book contains appendix in which are presented numerous tables containing scientific and practical data of interest to food processors and a list of journals of topical interest.

("The Technology of Food Preservation," 418 pp, may be obtained by sending $8.50 (foreign, $9.50) to AVI Publishing Co., Inc., 7 Taylor Place, Westport, Conn.)

"With due respect to the deceased—but that container is not suitable for sardines!"

New returnable containers for five-, 15-, 30- and 55-gal of liquid (left, top, center and bottom, respectively) handle and palletize well, have great stacking strength

New family of returnable composite drums for liquids

. . . challenges conventional steel-poly drums on

- Durability
- Light Weight
- Lower Cost
- Handling

These foods and food-type liquids may be shipped in the new wirebound composite containers, according to M.C.A.-I.C.C. regulations:

Brine	Milk
Cider	Palm oil
Coconut oil	Peanut butter
Coffee	Peanut oil
Corn oil	Pickles
Distilled water	Salt
Fountain syrups	Sucrose
Fruit juices	Table syrups
Glucose	Vinegar
Lime water	Walnut liquor
Mayonnaise	Yeast

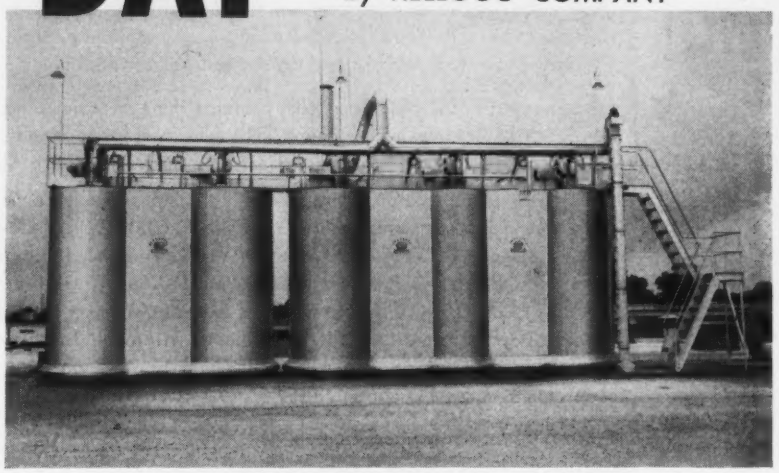
NEW line of returnable composite shipping containers for liquids may give strong competition to conventional lined steel drums for shipment of "any liquid safe in polyethylene" (see box).

Available in five-, 15-, 30- and 55-gal sizes, the new composite containers have an inner rigid polyethylene drum enclosed in an outer wirebound wooden octagonal drum (except in the five-gal size).

Since the new packs are classified as drums, they benefit from the lowest freight rates on shipments and on return of empties. Here are

(*Continued on page 52*)

DAY *plant proven bulk storage tanks used for rice tempering by KELLOGG COMPANY*



Battery of 5 DAY Insulated Tanks Serving Kellogg's Memphis Plant

Rice for America's most popular rice cereal, Kellogg's Rice Krispies, is tempered in this battery of 5 DAY insulated bulk storage tanks. Located in Kellogg's Memphis, Tennessee, plant, these tanks are 8 feet in diameter and 30 feet high. Designed and built by DAY, they are made of galvanized steel and have 3½ inch insulation covered with an aluminum jacket. In addition to these rice tempering tanks and a bulk sugar storage tank, DAY also supplied dust control equipment including filters and cyclones.

DAY engineered, designed and fabricated this equipment for Kellogg. Experienced DAY construction crews made the installation. Because of this type of service more and more companies are seeking DAY advice and using DAY equipment for pneumatic conveying, bulk storage and dust control. They know this equipment is built for their *specific* plant requirements.

For complete information write toDAY for free bulletins and the address of your nearby DAY representative.

The **DAY** *Company*

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The DAY SALES Company
848 Third Avenue N.E.
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DAY SINCE 1881

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Rexdale (Toronto), Ontario, Canada
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Representatives in Principal Cities

EXPERIENCE ENGINEERED . . . LABORATORY TESTED . . . PLANT PROVEN
Dust Control • Pneumatic Conveying • Bulk Storage
EQUIPMENT . . . SYSTEMS . . . INSTALLATION

6394 on Reader Service Slip.

While the food additive crisis continues to dominate the Washington scene (see page 21), it is important not to neglect another aspect of government interference with food improvement — the needless promulgation of all-inclusive, so-called recipe-type, rigid standards of identity.

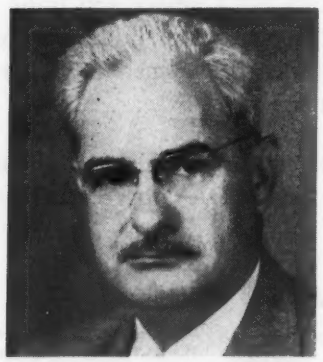
This month FOOD PROCESSING presents the first official indication of a desirable modification in the policy FDA has established on identity standards, along with the views of four top industry executives on this policy.

It is interesting to note that the outstanding series of articles by Michael Markel which were featured in FOOD PROCESSING in 1957 under the heading of "Unshackle Food Improvement" advanced the argument: When separate legislation is established controlling the safety of food additives, the only ingredients which should be fixed in an identity standard should be those essential to (1) identity, and (2) economic integrity. To these basic requirements we have added one more: (3) elimination of confusion in the mind of consumers — see November, 1959 FOOD PROCESSING.

Howard P. Milleville
Editor

Top executives view FDA Identity Standards as FDA indicates some modification in policy

JOHN L. HARVEY
Deputy Commissioner
Department of Health, Education, and Welfare
Food and Drug Administration



It is entirely possible that the application of the Food Additives Amendment to the statute may well offer a basis for less specificity in some areas than has been necessary in the past.

Perhaps it is not in order for us now to discuss the proposal to standardize peanut butter in the light of the fact that we currently have under consideration all of the views and comments submitted as a result of the published proposal. Currently, all I can say is that no final decision on the points you [FOOD PROCESSING] raise has been made.

I can assure you, however, that all of the suggestions for improving our food standards operations under the Federal Food, Drug, and Cosmetic Act are being given careful consideration and it is entirely possible that the application of the Food Additives Amendment to the statute may well offer a basis for less specificity in some areas than has been necessary in the past. Certainly, we welcome constructive criticism. •

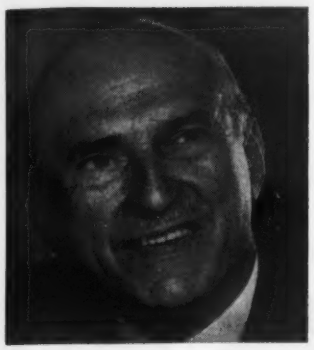
NATHAN CUMMINGS
Chairman of the Board
Consolidated Foods Corporation

When the question of modernizing identity standards is brought up, everyone is in agreement that everything possible should be done to arrive at policies which will prove beneficial to consumers and all segments of the food industry, and provide for effective enforcement by governmental agencies. However, when it comes to formulating the desired policies, there seems to exist a diversity of opinion as to what they should comprise.

True, present standards of identity fail to allow much leeway for touches of individuality. But by the same token, as they now cover a narrow range of items that are essentially commodities rather than recipes, I wonder how much current standards unreasonably restrict manufacturers in developing new and improved products.

A primary reason for this speculation is that many authorities in the food field agree that new and improved products are now being marketed fairly rapidly. This development is possible because identity standards do not and should not cover true processed recipe foods.

Further evidence of this contention is found in industry statistics which state that over one-third of today's grocery sales are composed of products that are either new or improved since 1946. Due largely to these numerous innovations, our country is generally recognized as being better fed than any nation on earth, plus having the largest variety of foods from which to choose.

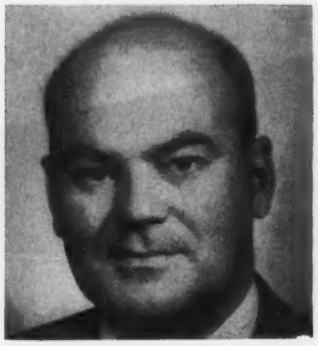


CUMMINGS

Identity standards should not cover true processed recipe foods.

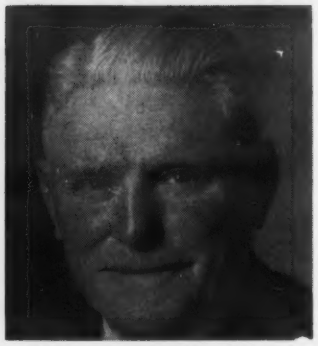
COPPERS

Over-rigid standards lead to merchandising and promotion of imaginary or meaningless differences.



FOX

FDA's standard of identity program is entirely too restrictive.



TURNBOW

The consumer is entitled to the nutritional and economic benefits of an improved food just as soon as safety is assured.

In view of statements, and considering that identity standards are confined mainly to ingredient or commodity type products, it does not appear that present identity standards are forcing manufacturers to work under regulations which are excessively severe.

However, these statements should not be construed to mean that attempts should not be made at present to streamline existing identity standards. In addition, there is a strong possibility that some advantages might be derived by creating a system providing for the periodic review of established standards.

It may be advisable to establish legislation which would provide for effectively designating those products which meet identity standards. Certainly, wherever possible, steps should be taken to list ingredients in language which is understandable by consumers.

In conclusion, it is evident that we should be constantly alert for opportunities to modernize the standards program. But it is equally apparent that this does not give us a mandate to inaugurate changes without having first considered them carefully as to their possible consequences on consumers, the food industry, and governmental agencies. •

GEORGE H. COPPERS
President
National Biscuit Company

Many informed people have suggested that the rigidity of existing standards of identity has prevented improvements in the foods subject to them. This is difficult to prove. But any standard that is more rigid than required "to promote honesty and fair dealing in the interest of the consumer" must, it seems to me, discourage research. And anything that discourages research will retard or inhibit improvements.

The uniformity of product dictated by recipe standards may promote honesty and fair dealing. At the same time, the inflexibility of such standards and the difficulties inherent in changing them do divert the energies of competitive producers from product improvement to the merchandising and promotion of imaginary or meaningless differences.

Such efforts not only tend to confuse the consumer, but, fired by competition, are apt to lead to other abuses, such as the exaggerated or unsubstantiated claims that Commissioner Larrick has termed "nutritional quackery."

I do not mean to imply such practices are spawned only by too rigid food standards; obviously they exist in the marketing of many unstandardized foods. What I do mean to say is that over-rigid standards, by eliminating competitive differences in product, are more likely to foster such practices than are more flexible standards which permit competitive differences and encourage product improvement. •

JOHN M. FOX
President
Minute Maid Corporation

In our opinion the standards of identity program as advocated by the Food and Drug Administration is entirely too restrictive and imposes unnecessary hardships on manufacturers in demanding that they adhere too closely to "recipes" in making labeled products.

These restrictions discourage a new product improvement program since any change in the recipe as outlined in the standards of identity makes it illegal to label the commodity by its recognized name, and to change the standard of identity in recognition of an improvement practically requires an act of Congress and innumerable expensive public hearings that require a manufacturer to just about turn over all of his manufacturing secrets to his competitors.

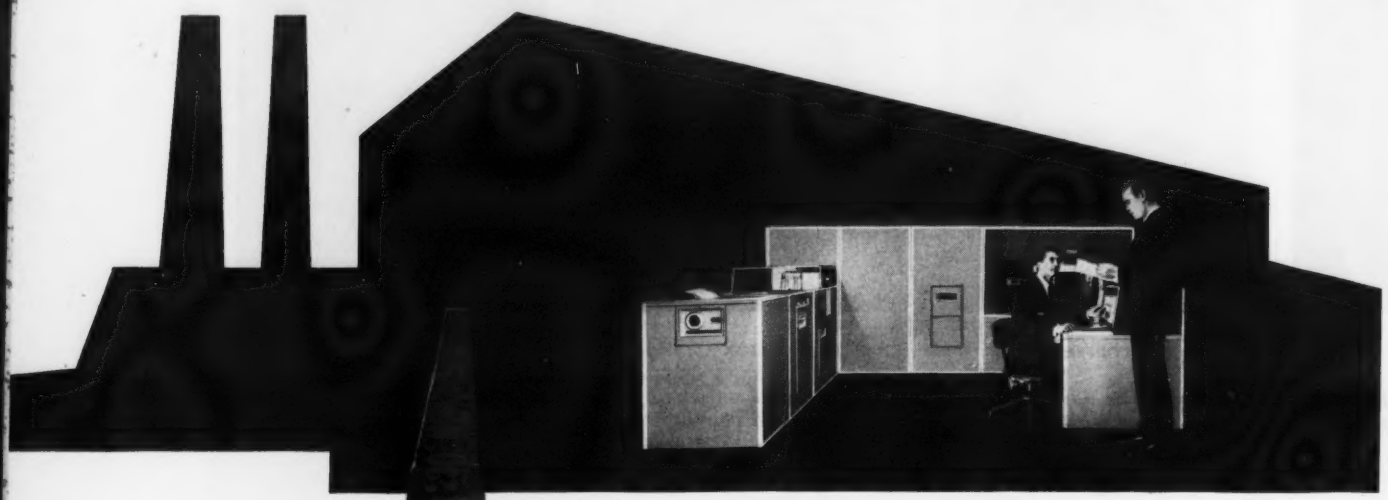
We agree with Mr. Markel, who we understand insists that FDA should limit food standard laws to (1) prevention of food dilution, (2) assurance of health and safety in foods, and (3) prevention of deceptive practices. •

GROVER D. TURNBOW
President
Foremost Dairies, Inc.

Two years ago, I made this statement: We in Foremost do not want to be unreasonably restricted or delayed in our development of new food ingredients because of some

(*Continued on page* 118)

one late decision on inventory and this $50 part* could cost you $5,000



IBM RAMAC® 305

controls inventory data to prevent costly "out-of-stock" conditions

A delay in production caused by an "out-of-stock" part can make that part the most expensive item in your stock. IBM RAMAC 305 gives you the fast and accurate control over inventory that helps you avoid costly shortages—or equally costly overstocking.

As each transaction is entered into RAMAC, all affected records are immediately posted and updated. Management may inquire as to the status of any specified item in inventory. This random access ability is an exclusive feature of the IBM RAMAC.

Balanced Data Processing . . . IBM services as well as machines . . . is a continuing responsibility of IBM to its customers. Like all IBM data processing equipment, RAMAC 305 may be purchased or leased.

IBM®

balanced data processing

Plants, Companies, Personalities

Corn Products Company

has appointed Emerson F. Schroeder president of Corn Products International, succeeding James A. Moffett, who has retired to become an executive consultant and company director. Schroeder will head an organization which

maintains processing and packing facilities in 20 Free World countries. He is succeeded as Corn Products manufacturing head by Frank E. Glotfelty.

Adolph's Food Products Manufacturing Co.

Burbank, Calif. has named Dr. Paul G. Miller research director. He was formerly

assistant research director of Thomas J. Lipton Company, Hoboken, N.J.

General Mills

has promoted Lester F. Borchardt from director of physical research to managing director of the Central Research Laboratories, Minneapolis. He replaces Dr. R. H. Manley, retired.

For more information on product at left, circle 6375 see information request blank opposite last page.

Recent developments, limiting the use of certified coal tar food colors, has provided . . .

Increased importance for Annatto color in cheese, ice cream, edible oils, etc.

THE recent developments in certified coal tar food colors, revolving around their potential toxicity and carcinogenicity, have served as a tremendous stimulus in increasing the importance of natural food colors of vegetable origin.

Many dairy and food processors are giving serious consideration, both from a standpoint of performance and economy, to the use of vegetable colors.

Among the important vegetable colors is Annatto, being used extensively in the food industry for coloring cheese, butter, ice cream, margarine, shortening, bakery products and edible oils.

In cheesemaking, aqueous alkaline Annatto color is used in the initial stage of manufacture. Approximately one ounce is added to 1000 pounds of milk.

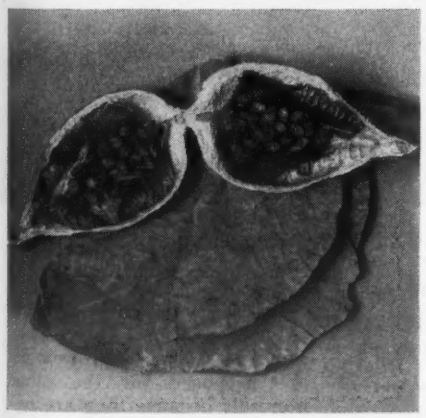
This extremely small amount of Annatto color is sufficient to impart to the cheese the shade of yellow desired by the cheesemaker. The quality of this color is maintained at a high level through extremely careful process control in the plant and modern spectrophotometric methods of assay in the laboratory.

Annatto Cheese Color is packaged in one-gallon glass jugs, five-gallon metal pails and 15-, 30- and 54-gallon steel drums.

Annatto ice cream color is essentially the same as cheese color in its composition, properties and method of manufacture. At the discretion of the ice cream manufacturer, one-half ounce of color or less is added to 100 pounds of ice cream. Exact amount to be used depends upon whether a cream tint or yellow shade is desired.

Annatto extracts have a high degree of stability. Following studies, it has been reported that bixin (a carotenoid carboxylic acid — the principal color pigment in Annatto) is much more stable than carotene. Furthermore, it has about five-fold more coloring power than an equal amount of carotene.

(Annatto Cheese Color is a product of Paul-Lewis Laboratories, Inc., 4253 N. Port Washington Ave., Milwaukee 12, Wisconsin.)
6376 on Reader Service Slip.



Annatto color is derived from the pulp surrounding the dried seeds of a fruit from a small tree, Bixas Orellana. This tree is cultivated throughout most of the moist tropical regions of the world. The shrub-like tree produces a fruit which is a reddish, two-valved, nearly egg-shaped pod covered with soft, reddish, weak prickles. View at left is an opened Annatto pod, showing the position of the seeds. Seeds are removed from the pod and dried as shown at right. These are the raw material for Annatto color manufacture. The United States imports about 500 tons of Annatto seed annually

New finer flavor improves sales!

BLACK WALNUT

with exclusive Walnadyne

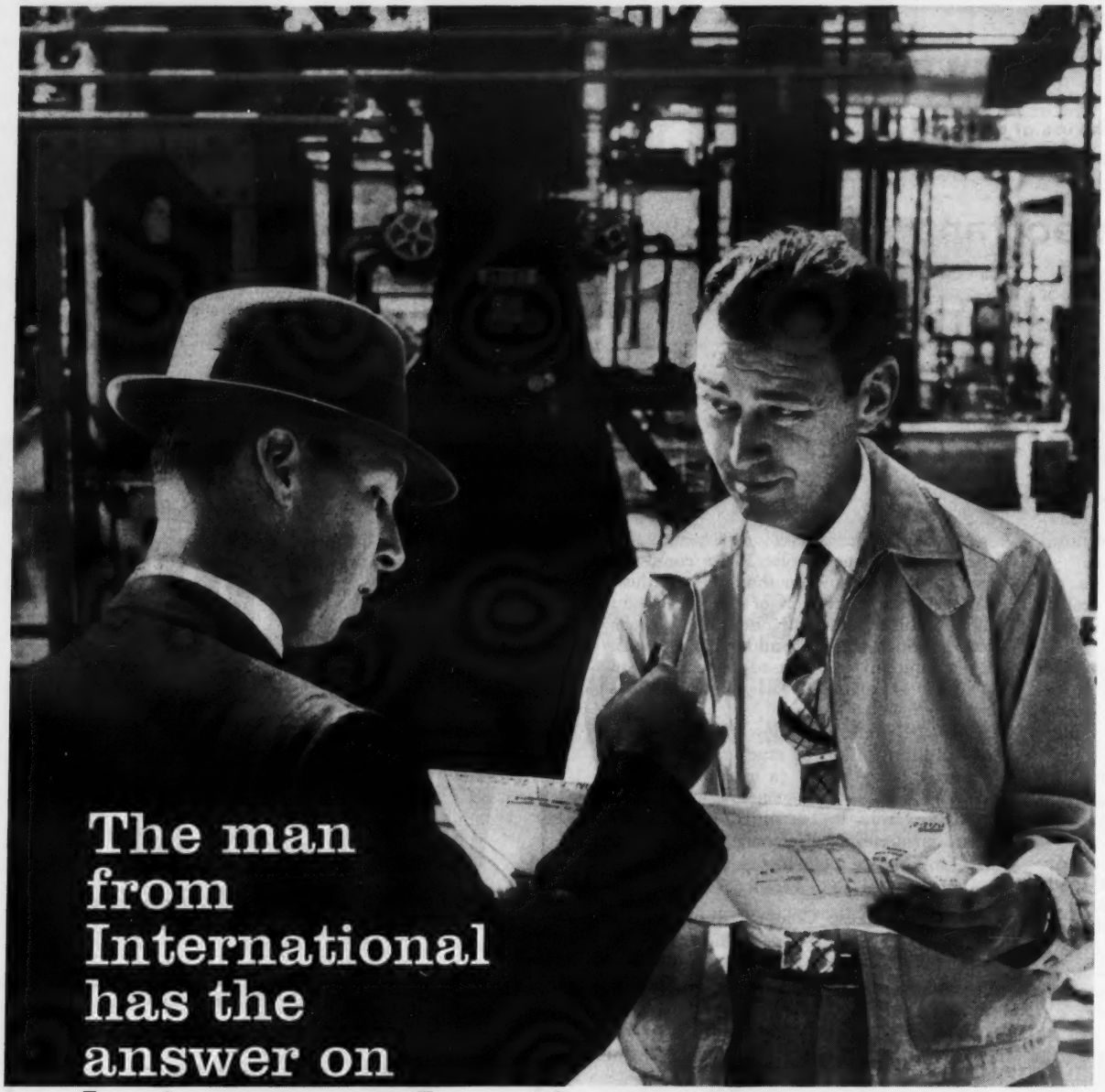
--a synergistic compound that gives these advantages--

- TRUER FLAVOR
- HEAT RESISTANT
- DISPERSES READILY
- GREATER STABILITY
- ECONOMICAL

BLACK WALNUT NO. 2047
Used ½–1 oz PER 100 LB. BATCH. Price per gallon $12.50

Better Flavors for Better Products
FLAVOREX CO., INC.
302 S. CENTRAL AVE., BALTIMORE 2, MD.

6377 on Reader Service Slip.



brine production Final details for a new brine-production system are checked by an International Salt Company sales engineer and his customer. Specially designed to fit a medium-sized plant where interior space is unavailable, the system calls for a storage Lixator*, a large-scale rock-salt dissolver operating on the self-filtration principle discovered by International. Lixators can be adapted to meet any space and production requirements. The man from International is a technical specialist in the efficient production, use and storage of brine. His experience, knowledge and on-the-spot service are the vital extras that make International the first choice of so many salt-using companies. To put these extras at your disposal, contact International Salt Company, headquarters: Clarks Summit, Penna., or the district office nearest you: Boston, Buffalo, Charlotte, Chicago, Cincinnati, Detroit, Newark, New Orleans, New York City, Philadelphia, Pittsburgh, St. Louis.

*Reg. T.M. of the International Salt Company.

INTERNATIONAL STERLING SALT SALT COMPANY

"A STEP AHEAD IN SALT TECHNOLOGY"

6378 on Reader Service Slip.

FDA proposes . . .

37 safe additives for animal feeds

List, with limits on amounts to be used, published in Federal Register

A FDA proposal that 37 compounds, serving as the source of minerals in animal feeds, which should be generally recognized as being safe, has been published in the Federal Register. The Action is a further move to comply with provisions of the Food Additives Amendment which, FDA points out, covers substances added to animal feeds as well as those for human foods.

Minerals are listed with limits on amounts to be used for consideration by qualified experts throughout the country. Included in the proposal are compounds which are the sources of cobalt, copper, iodine, iron, manganese and zinc.

FDA recognizes the practice of adding mineral salts to feed mixtures for swine, cattle, poultry and sheep. It has been scientifically demonstrated, however, that harmful effects can result from feeding excessive amounts of these compounds.

Limitations listed are intended to define safe levels to be used in feeds for the total ration to prevent possible harm to animals.

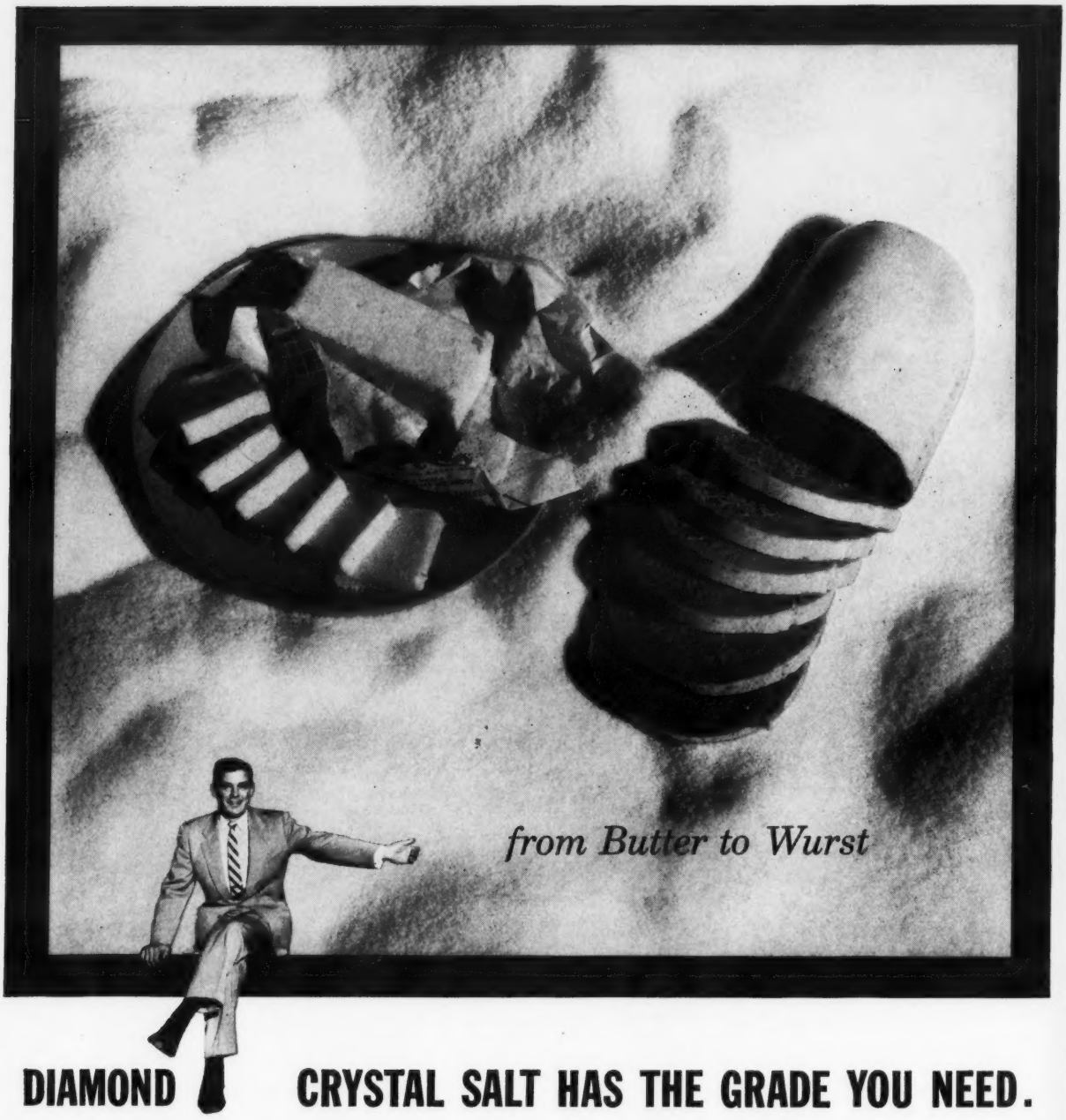
Under the agency proposal, cobalt would be restricted to use as a feed supplement for ruminants — cattle, sheep and goats. Zinc would be restricted to use as a feed supplement for swine and poultry only.

FDA states that these restrictions are based on data indicating that cobalt and zinc have value only for the animals specified. No restrictions as to specific animals are proposed for the other minerals because they are be-

For more information on product at right, circle 6379 . . . see information request blank opposite last page.

Formula for perfect flavor! There are two ways to improve the quality and consistency of the flavors you use. Choose from Kohnstamm's unique collection of assorted flavors. Or have Kohnstamm researchers create a new flavor designed specifically for your needs. Call today and learn which way is best for you.

H. KOHNSTAMM & COMPANY, INC.
Established 1851
161 Avenue of the Americas, New York 13 / 11-13 E. Illinois St., Chicago 11 / 2632 E. 54 St., Huntington Pk., Calif.
Branches in other principal cities of the U.S.A. and throughout the world



DIAMOND CRYSTAL SALT HAS THE GRADE YOU NEED.

Because the quality and grade of salt used in food products makes a significant difference in the end-result, Diamond Crystal has a specific salt for any specific need—each of the highest uniform purity.

Diamond Crystal Salt combats danger of spoilage, enhances and improves the taste of your product. The presence of calcium and magnesium in a less pure salt could form unappetizing scums and discolorations in some canning processes. In other types of foods, copper and iron in the salt could foster oxidative rancidity, especially in foods containing fats and oils.

All salt is not alike. Diamond Crystal's exclusive Alberger process produces a flake-type salt that is 99.95% pure. This high purity eliminates salt bitterness, thus resulting in best flavor development of your product.

Diamond Crystal Salt Co.'s staff of trained food specialists are available to assist you in selecting the correct grade or type salt for your product. For more information, call the nearest Diamond Crystal sales office or write to Diamond Crystal Salt Co., St. Clair, Michigan.

Diamond Crystal Salt Co.

ST. CLAIR, MICHIGAN

Sales Offices: Akron • Atlanta • Boston • Charlotte
Chicago • Detroit • Louisville
Minneapolis • New Orleans • New York

Plants: Akron, Ohio • Jefferson Island, Louisiana
St. Clair, Michigan

6380 on Reader Service Slip.

lieved to have some value for all animals. The proposed list includes:

COBALT (.0002% limit — to be used as a feed supplement for ruminants only.)

Source Compounds:
Cobalt acetate
Cobalt carbonate
Cobalt chloride
Cobalt oxide
Cobalt sulfate

COPPER (.0050% limit)

Source Compounds:
Copper carbonate
Copper chloride
Copper gluconate
Copper hydroxide
Copper oxide
Copper sulfate

IODINE (.00015% limit)

Source Compounds:
Calcium iodate
Cuprous iodide
Potassium iodate
Thymol iodide

IRON (.0250% limit)

Source Compounds:
Ferric ammonium citrate
Ferric chloride
Ferric oxide
Ferric phosphate
Ferric pyrophosphate
Ferrous carbonate
Ferrous gluconate
Ferrous sulfate
Reduced iron

MANGANESE (.0050% limit)

Source Compounds:
Manganese carbonate
Manganese chloride
Manganese dioxide
Manganese gluconate
Manganese oxide
Manganese sulfate
Manganese phosphate (dibasic)

ZINC (.0050% limit — to be used as a feed supplement for swine and poultry only.)

Source Compounds:
Zinc acetate
Zinc carbonate
Zinc chloride
Zinc oxide
Zinc sulfate

Flavor imparts hickory smoke taste

A sweet tasting hickory smoke flavor, of natural origin, may be used for flavoring meatloaf, baby foods, dehydrated soup mixes, condiments, cheeses and spreads, sauces, seasoning salts and specialty foods such as potato chips.

It may also be used wherever a smoked meat flavor is desired such as in pork and beans or smoked ham in pea soups. When used with fats or oils, it imports a

(*Continued on next page*)

Staley Quality Improvement Pointers:

in flavor, body, color, profits...

Sweetose makes the difference! Here's why!

In combination fruit juice drinks, Sweetose blends and enhances the natural flavors and colors of fruits.

In canned fruit sauces, Sweetose holds appetizing natural color. Enhances that just-picked flavor with balanced sweetness.

Sweetose, the original enzyme-converted corn syrup, brings out true fruit flavor . . . gives a brighter, richer, more appetizing appearance that wins sales!

Whether you pack jams and jellies, fruit juice drinks, or fruits and berries, remember this: bland, crystal-clear Sweetose Corn Syrup gives balanced sweetness control—never masks a flavor no matter how delicate.

Strawberries taste like real strawberries, grapes like real grapes, peaches like real peaches, for Sweetose holds natural "fresh-picked" flavor! Captures true fruit colors at their peak. Improves appearance, body and texture in a wide variety of fruit products.

Look into the many advantages of Sweetose today. For more information on how Sweetose can impart customer-winning characteristics to your products at *definitely lower sweetener costs*, see your Staley Representative at the branch office nearest you, or write:

A. E. STALEY MFG. CO., DECATUR, ILLINOIS
Branch Offices: Atlanta • Boston • Chicago • Cleveland
Kansas City • New York • Philadelphia • San Francisco • St. Louis

Sweetose®
THE ORIGINAL ENZYME-CONVERTED CORN SYRUP

6381 on Reader Service Slip.

This little old woman, who lives in a shoe,
Buys lots of food; good thing it's true
That foods protected with

SORBISTAT®-K

Stay fresher longer...this easy way!

TODAY A WIDE RANGE OF FOODS get the benefits of "freshness protection" thanks to SORBISTAT-K (potassium sorbate, Pfizer). By effectively inhibiting mold and yeast growth, SORBISTAT-K keeps food fresher—and extends its shelf life!

These are some of the products where SORBISTAT-K has proven highly successful:
• fresh fruit cocktails • high moisture cake batter • cake fillings and icings • fruit pie fillings • cheeses • fountain fruit syrups • chocolate syrups • prepared salads • pickles • dietetic jams and jellies • smoked and pickled fish • wine • dried fruits.

SORBISTAT-K is readily soluble in water. You can prepare up to 40% solutions for sprays, dips and metering. It has little or no effect on the taste.

New Improved SORBISTAT For Dry Mix and Oil Solution—Pfizer now offers SORBISTAT (sorbic acid, Pfizer) for applications where water solubility is not a factor. This improved form has an extremely low moisture content.

SORBISTAT is a free-flowing product that dissolves readily in oil and fat media and can be mixed easily in dry form with other dry food ingredients. Complete technical data on both SORBISTAT-K and SORBISTAT will be sent on request. Write today.

Science for the world's well-being

CHAS. PFIZER & CO., INC.
Chemical Sales Division
630 Flushing Ave., Brooklyn 6, N.Y.
Branch offices:
Clifton, N.J.; Chicago, Ill.;
San Francisco, Calif.;
Vernon, Calif.; Atlanta, Ga.;
Dallas, Texas;
Montreal, Can.

(*Continued from preceding page*)

taste of smoked bacon or ham.

Ingredient is stable to high processing temperatures and has excellent shelf life characteristics. Amount of flavoring used is governed by strength of smoke flavor desired. However, one-half to one per cent flavoring provides a strong smoke flavor to a food.

(Additional information and samples of Smoke Yeast Flavor are available through local Florasynth branch offices or from Florasynth Laboratories, Inc., 900 Van Nest Ave., New York 62, N. Y.)
6382 on Reader Service Slip.

FDA classifies additives for baking industry

Last year, the American Bakers Association sent questionnaires to a cross-section of its membership to find out what ingredients were being used by bakers which might be subject to the Food Additives Amendment.

After tabulation, the ingredients reported were submitted to the FDA for review.

In a letter to Joseph M. Creed, Counsel for ABA, Deputy Commissioner John L. Harvey, of FDA, indicated that, from the standpoint of the Food Additives Amendment, the ingredients submitted fall into three categories.

1. Substances generally recognized as safe. (The following list includes only those ingredients which did not appear on the list of 182 additives, officially recognized as safe by FDA, published in the January issue of FOOD PROCESSING.)

Algin
Brewer's Yeast
Butyric Acid
Ethyl Alcohol
Ethyl Vanillin
Gum Arabic
Lecithin
Methyl Cellulose
Sodium Carboxymethyl Cellulose (if of proper specifications)
Sodium Pectate
Starch (Corn)
Vanillin
Waxy Maize Starch (Natural)

2. Substances for which it is believed food additive regulations will be required.

Acetylated Glycerol-Mono-Oleate
Fumaric Acid
Mineral Oil
Nitric Acid Treated Flour
Polyoxyethylene (8)-Mono-Stearate
Polyoxyethylene-Sorbitan Monostearate
Sodium Tetra Thiomate
Sorbitan Monostearate

3. Substances on which there is insufficient information to offer authoritative comment. (Generally speaking, this results from the use of general terms and trade names.)

Aldehyde C 18
Almond Emulsion
Almond Flavor
Antioxidant Salt
Artificial Flavors
Bitter Almond Flavor
Black Walnut Flavor
Brokay
Caramel Flavor
Chocolate Flavor
Cinacoa
Coffee Cake Emulsion
Cottonseed Meal (need manufacturing process)
Imitation Banana Flavor
Imitation Brandy Flavor
Imitation Coconut Flavor
Imitation Lemon Oil
Imitation Strawberry Flavor
Imitation Vanilla
Lemon Emulsion
Madera Flavor Concentrate
Mallet Base
Maple Emulsion
Orange Emulsion
Orange Flavor
PB 24
Pro-Flo
Raspberry Flavor
Rum Butter Flavor
Semi-Terpeneless Lemon
Semi-Terpeneless Oil
Spice Blend Emulsion
Sweet Dough Flavor

In addition, Mr. Harvey also pointed out: "Any certified coal-tar colors of the FD&C category are also regarded as acceptable as far as safety is concerned provided, of course, the certification of the particular color has not been cancelled."

Federal regulations on use of antioxidants in food products

Food-grade antioxidants and their use in fat and oil-containing foods are completely described in 26-page catalog. Included is a summary of current Federal regulations governing the use of antioxidants in food products.

An introductory section discusses the role of antioxidants as an additive for food products, and how they function to retard the oxidative changes which lead to rancidity. Detailed information

(*Continued on next page*)

THE
THREE P's IN SPISORAMA PEPPER
ARE

PURITY PREDICTABILITY POTENCY

Like any foundation, a basic seasoning such as pepper must be a skillful composite of the finest materials and artistic craftsmanship. SPISORAMA dry soluble PEPPER is a premium product, made from pure oleoresin black pepper decolorized and standardized at a level of ultimate quality. All the bite, all the time-honored flavor of the world's finest Black Pepper are captured in this product, and made instantly available for maximum utilization in dry soluble form. Absolute freedom from specking is guaranteed, as are maximum purity, potency and predictability. Exacting standards of manufacture, and the use of all stainless steel equipment are our own best assets and our safeguards to you. Trial quantities on request.

D&O ESTABLISHED 1798

Essentially for You

OUR 161st YEAR OF SERVICE

DODGE & OLCOTT, INC.

180 Varick Street, New York 14, N. Y.

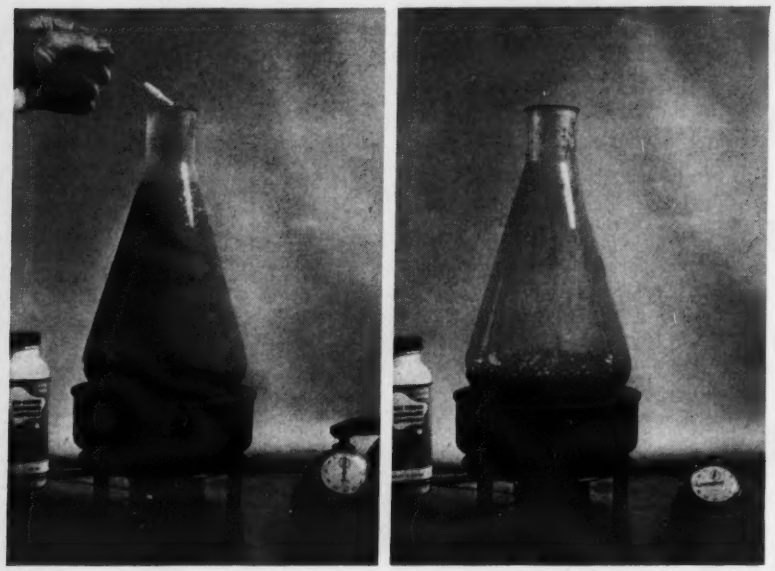
Sales Offices in Principal Cities

ESSENTIAL OILS • AROMATIC CHEMICALS • PERFUME BASES • FLAVOR BASES • DRY SOLUBLE SEASONINGS

6383 on Reader Service Slip.

SILICONE NEWS from Dow Corning

Stop Foam Fast



Dow Corning Silicone Defoamers Increase Production, Cut Costs

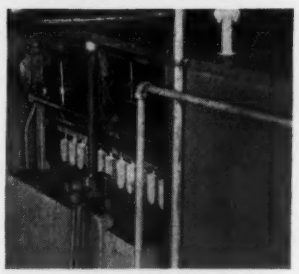
You can't beat Dow Corning silicone defoamers for foam control. Job-proved to be the fastest, most efficient and effective foam killers ever developed, Dow Corning defoamers speed processing time, reduce product waste, minimize maintenance and eliminate the chance of boil-overs and fire hazards.

IN WINE FERMENTATION

Easy-to-use Dow Corning silicone defoamers eliminate troublesome foam in the processing and packaging of foods, beverages, syrups and antibiotics. Highly effective at low concentrations, they knock down a mountain of foam and minimize recurrence, without contaminating the product.

Odorless, tasteless and physiologically harmless, Dow Corning Antifoam A may be used in nonstandard foods at concentrations up to 10 ppm; water-dilutable Antifoam AF Emulsion may be used at concentrations to 34 ppm.

Write for a FREE SAMPLE giving an indication of your foaming problem and whether it's in an aqueous or oil system. Address Dept. 5702.



IN PROCESSING FROZEN BARS

first in silicones

Dow Corning CORPORATION
MIDLAND, MICHIGAN

ATLANTA BOSTON CHICAGO CLEVELAND DALLAS LOS ANGELES NEW YORK WASHINGTON, D. C.

6384 on Reader Service Slip.

ingredients

(*Continued from preceding page*)

on the physical and chemical properties, solubility data, and a guide to the selection of the most effective formulation to stabilize a given food product are also presented.

In a separate section of the catalog, the principal methods used for the addition of antioxidants to food products and the various antioxidant evaluation tests are discussed.

(Copies of Cat No. G-109, "Tenox, Eastman Food-Grade Antioxidants", are available from Eastman Chemical Products, Inc., Subsidiary of Eastman Kodak Company, Kingsport, Tenn.)
6385 on Reader Service Slip.

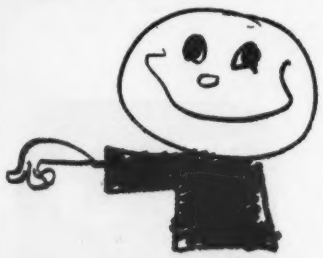
Flavor simulates open-fire broiling

Seasoning adds flavors closely simulating those associated with open-fire broiling to processed foods such as steaks, hamburgers, poultry, eggs, gravies, or soups.

As little as one part seasoning to 100 parts of processed foods adds a smoky taste and intensifies aroma. Product is a barley-malt meal dried in wood smoke.

(Test samples of Char-Zyme seasoning are available from Red Arrow Products Corp., PO Box 1463, Milwaukee, Wisconsin.)
6386 on Reader Service Slip.

VOTE FOR YOUR FAVORITE CARTOON



See this month's "FP Hall of Fame Cartoon" on page 117, and then vote for large reproduction of your favorite on the Reader Service Slip.

USE THESE NEW SMOKED YEASTS FROM VICO . . . .

Give a sweet, natural hickory smoke flavor to canned, baked, frozen foods—perfect as a masking flavor for pet foods, pharmaceuticals, other specialties.

Both Hickory Smoked Brewers' Yeast and Hickory Smoked Torula Yeast have been added to our line of KATER brand hickory smoked products. Both the Brewers' Yeast and the Torula Yeast are *naturally* hickory smoked to a high flavor level, yet they cost less than ordinary smoked yeasts.

High in protein, non-fermentable and highly palatable, they give a delicious, meaty smoked flavor to other foods.

KATER Hickory Smoked Yeasts, dried at temperatures above pasteurization, are acceptable under all regulations of the U.S. Food, Drug and Cosmetic Act, as amended. Approved for certain applications in federally inspected meat plants.

Smoked-flavored food products are big business—get your share! If you process canned meats, soups, stews, sauces, baked goods, prepared mixes, dressings, frozen pre-cooked or prepared foods, pharmaceutical, pet foods, or other specialties, ***WRITE FOR FREE SAMPLE ON YOUR LETTERHEAD.***

VICO PRODUCTS COMPANY

Manufacturing chemists for the food and pharmaceutical industries

415 W. Scott, Dept. FP, Chicago 10, Ill.

6387 on Reader Service Slip.

All the facts about guar gum

A complete discussion on guar gum is offered in 16-page booklet.

Included is information on physical and chemical properties, Food and Drug Standards, preservatives, ease of handling, types and applications, etc.

An introduction provides a short background on guar gum as well as pointing out some outstanding features. Illustrated booklet contains numerous charts and diagrams on analysis of guar gum, rate of cold water hydration, effect of temperature on viscosity, viscosity versus shear rate, electrolyte compatibility and compatibility over wide pH range.

Manufacturer's technical service is briefly described.

(Booklet, "Jaguar — Guar Gum by Stein Hall", is available from Stein Hall & Co., Inc., 285 Madison Ave., New York 17, N. Y.)
6388 on Reader Service Slip.

Positive fermentation offers 5 new products

The case history of the development of five new products at one meat packing company, through positive fermentation, is described in a one-page circular.

Starter culture used enabled packer to cut two days or more off the usual production schedule for Thuringer and other semidry sausage products. In addition to Thuringer, new products also include Lebanon style bologna, cooked salami, summer sausage and pork roll.

Product is in convenient powdered form, requiring no new equipment for its use. It is MID approved for summer sausage, Lebanon, thuringer, cervelat, salami and pork roll.

("Five Profitable New Products Made Possible With Accel", one-page circular, is available from Merck & Co., Inc., Rahway, N. J.)
6392 on Reader Service Slip.

Taste Appeal... Eye Appeal... Buy Appeal with...

OK BRAND

DRI-SWEET
CORN SYRUP SOLIDS

More successful processors are recognizing the advantage of a single conditioner-sweetener like OK BRAND DRI-SWEET Corn Syrup Solids.

DRI-SWEET fortifies *Taste Appeal* by keeping comminuted meats at the peak of their natural deliciousness. Retains flavor and juices without over sweetening.

DRI-SWEET puts more into *Eye Appeal* because this pure, transparent and nutritious carbohydrate from corn syrup preserves appetizing colors. Reduces watering-off and shrinkage. Binds meat particles for more appealing texture (easier processing, too!)

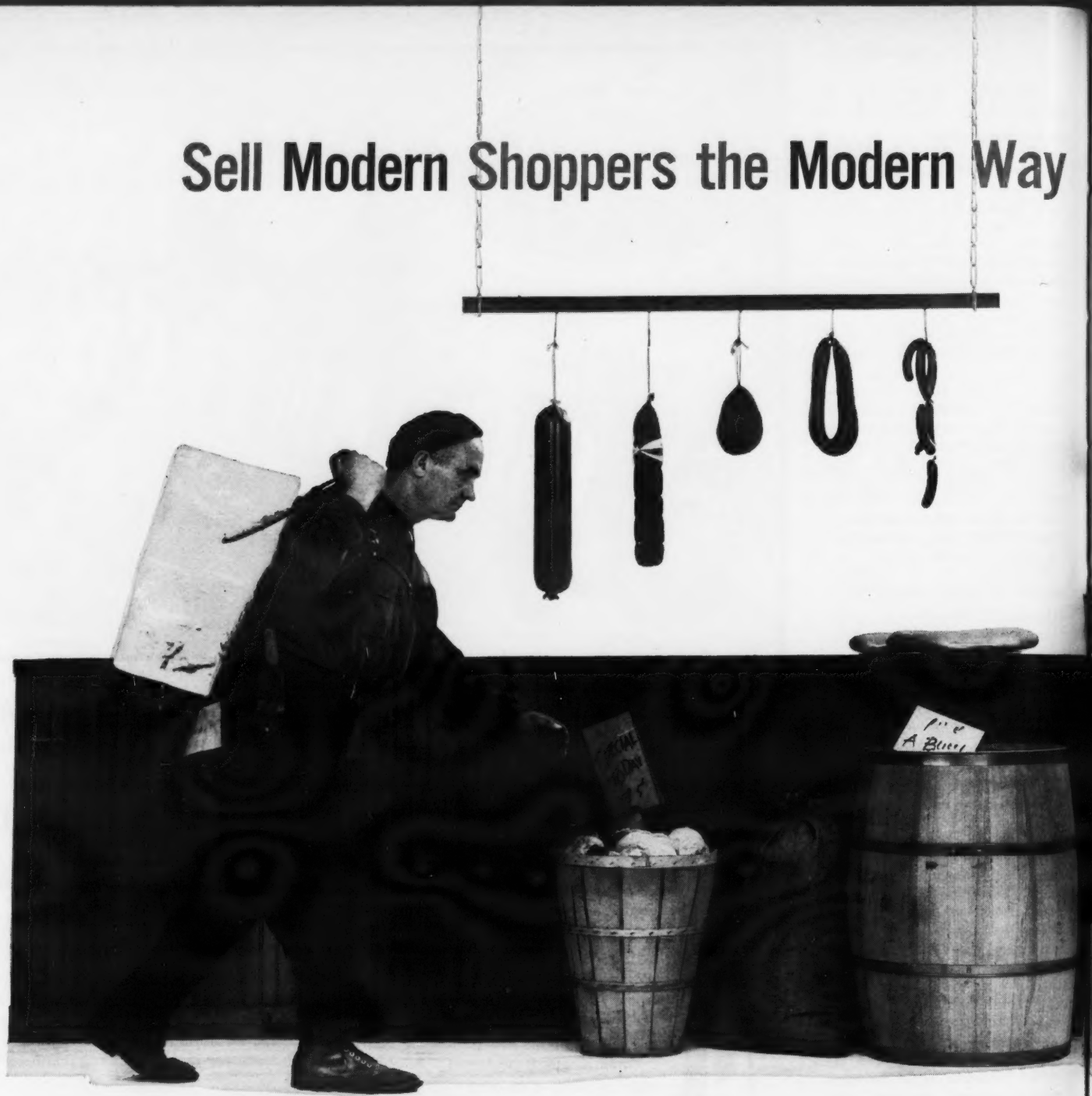
Proper taste and eye appeal add up to greater *Buy Appeal.* Only OK BRAND DRI-SWEET performs so well, yet is so economical and easy to use. Available in 2 popular forms: OK BRAND DRI-SWEET 42 D.E. Coarse and 42 D.E. Powdered. All available in convenient 100 lb. moisture-proof bags.

"The Man From Hubinger" is ready to offer detailed advice on how OK BRAND DRI-SWEET can improve your comminuted meats. If he hasn't called on you, write, wire or phone today for prompt attention to your needs.

THE HUBINGER COMPANY
Keokuk, Iowa
NEW YORK • CHICAGO • LOS ANGELES • BOSTON • CHARLOTTE • PHILADELPHIA

6389 on Reader Service Slip.

Sell Modern Shoppers the Modern Way by



Would you dream of competing for today's food dollar with yesterday's processing, packaging or marketing methods? Of course not. Then why overlook the tremendous advances being made in nutrition? Vitamins and amino acids developed for food processing by Merck give you an opportunity to back up the appetite appeal and convenience of your products with the very latest nutritional story. Here are a few suggestions.

Fortification with Merck Ascorbic Acid provides strong vitamin C claims for any number of products—from gelatin desserts and instant potatoes to fruit juice blends and instant drinks. Merck Lysine can improve protein quality of wheat-based cereals and specialty breads and other processed vegetable foods. Vitamins B_{12} and B_6—both pioneered by Merck—are musts for all ages, are loaded with consumer appeal, give you unlimited opportunity for offering shoppers extra nutritional value in your products.

If you have new products in the works, or are looking for ways to modernize and stimulate sales of existing products—remember that Merck offers nearly a dozen nutrients for fortification. All are easily adaptable to normal food processing operations.

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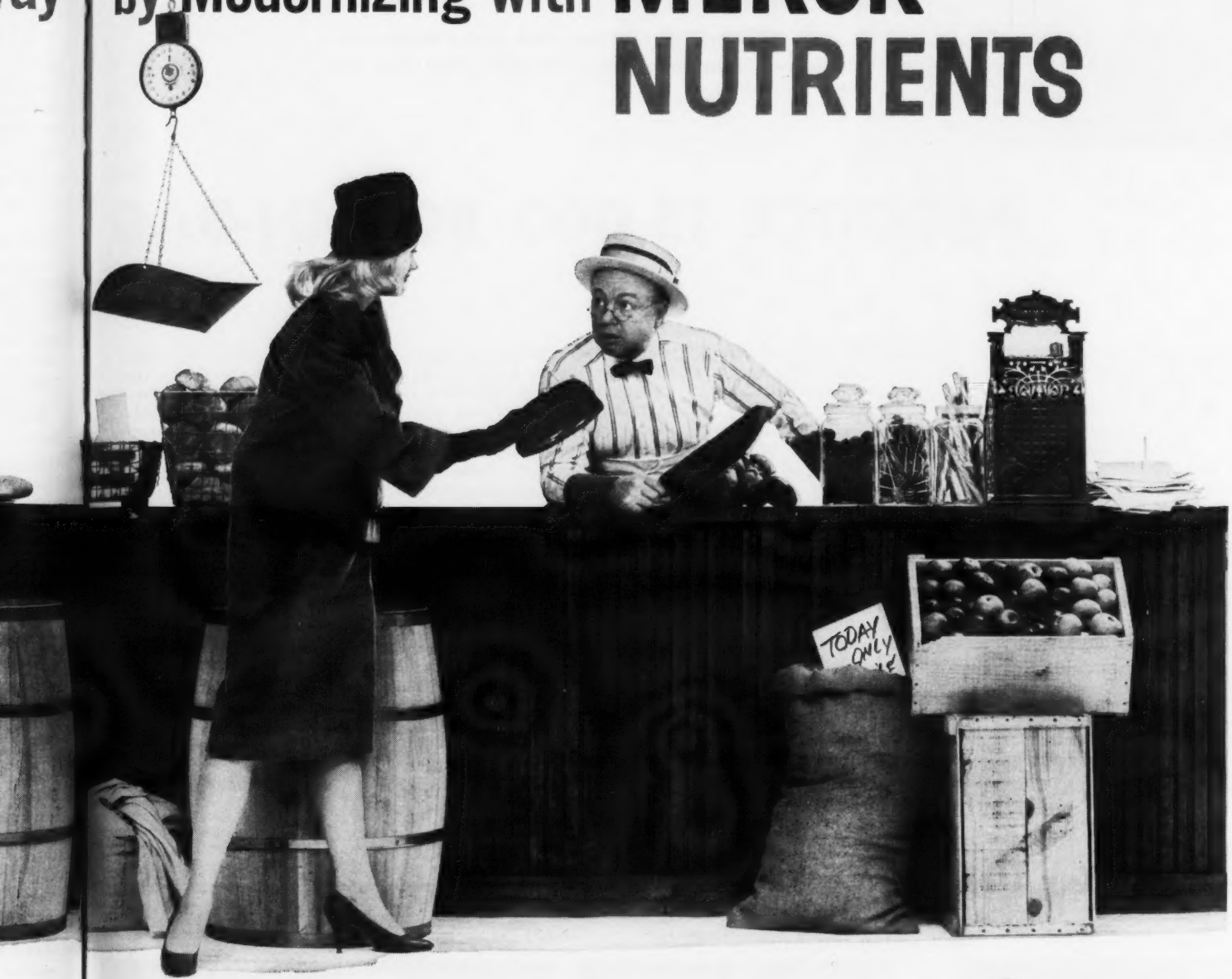


New booklet shows how you benefit from Merck's food processing laboratory. Send now for your free copy of "Merck Research for the Food Industry."

MERCK CHEMICAL DIVISION

MERCK & CO., INC. • RAHWAY, NEW JERSEY

6390 on Reader Service Slip.

At Wilson & Co., less than dozen employees — using latest semi-automatic equipment —

PRODUCE 15,000 BOIL-IN-BAG

Some 15,000 single-portion boil-in-bag frozen meals — ready for quick heating and serving by hotels, restaurants, drive-ins, coffee shops, hospitals and other institutions— are being produced daily by Wilson & Co. at its Fairmont, Minn., plant.

Personnel needed to produce this "Menu-Pak" line (consisting of 21 different precooked frozen entrees — see box above) are seven assembly-line empolyees, one chef and the services of a quality-control staff.

Rest of the operation is handled by semi-automatic machinery which opens, fills and seals pouches of polyester film, and by conveying equipment and freezers.

How it works. Operation begins under the chef's supervision in the cooking-mixing room.

Here the menu for the day (Wilson packages a different entree about every other day) is cooked at 210 F. Sauce ingredients, meat and vegetables are cooked in separate kettles.

After cooking, entree ingredients are scooped up and deposited in 1000-lb-capacity mixing kettles, where cylindrical agitators thoroughly mix ingredients (Photo 1).

Over-all cooking-mixing operation takes from 20 to 30 min, depending on the menu for the day.

After mixing, the slurry — containing evenly distributed solids — is pumped through stainless-steel pipes to the hoppers of filling machines in the adjoining room. (As many as three filling machines are used for one operation — depending on production needs.)

Filling operator manually removes opened polyester bags from automatic, vacuum-operated bag-opening machine (at right in Photo 2), designed by Minnesota Mining and Manufacturing Company, which can operate at speeds to 60 bags per min. Each package is held by its "head" until removed.

Operator positions opened bag under the semi-automatic filler, which is adjusted to spout food into the packages in the desired 4½- to 7-oz portions (Photo 2). (Certain components, such as beef slices, must be hand-filled.)

After each filling, the machine pauses just long enough for another bag to be placed under its funnel-like opening. Top filling rate is 30 bags per min.

The filled packages are conveyed via rubber-topped belt to one of two semi-automatic heat-sealing machines (Photo 3).

Operator flips and folds package tops to exclude excess air in pouch, then triggers sealing jaws by means of foot pedal. Each package is sealed at about 270 F.

Once sealed, the entrees are conveyed to the hand-operated scales for weight check, then placed on trays — each

Key Steps in 'Menu-Pak' Production

(1) Mixing

(2) Filling

(3) Sealing

NORB LEINEN
Associate Editor

Newest Menu-Pak items are Multi-Portion frozen entrees, consisting of six to ten servings of Ham with Raisin Sauce (left), Sliced Beef with Natural Gravy (center), Creamed Chicken (right) and 11 other entree items. Packaged in three-lb, Ekco-Alcoa aluminum (disposable) containers with foil-lined covers, entrees fit any standard steam table, can be served directly from the containers or transferred to steam-table pans

MEALS DAILY

large enough to hold 18 packages — in preparation for freezing.

The loaded trays are placed on tray pushcarts, containing 54 trays each, and wheeled to the freezers (Photo 4). About 3000 packages, frozen simultaneously, remain in the freezers for approximately an hour and 45 min.

When frozen, the entrees are wheeled in the trays to another rubber conveying belt manned by two workers who guide the packages into open cartons holding 12 packages each (Photo 5).

Cartons then are closed and transferred via pushcart to the storage refrigerator, where they remain in temperature of from zero to minus 10 F.

Close quality check. To assure continued quality control, Wilson conducts a packaging and food test every 10 min during the operation in the test kitchens of the Fairmont plant.

Three packages from each kettle-load are tested for sealability, and the contents tasted.

The packages undergo hand squeezing (Photo 6), extreme boiling and other rough treatment, and so far have passed all tests "superlatively," while retaining full food flavor and aroma, according to A. E. Bernardin, Wilson food production analyst in charge of the operation.

He also points out that rapid handling after each cook keeps bacteria count "fantastically low." About two hours elapse between time food is prepared until it is removed from the freezer.

Success of "Menu-Pak" — a product line begun after Wilson researchers decided that a new packaging technique was necessary to assure portion control over foods destined for institutional distribution — has led to current plans to greatly expand the operation.

In fact, Wilson may even enter the consumer field soon with this variety of plastic-packaged gourmet dishes — ranging from chop suey to turkey a la king.

("Scotchpak" brand heat-sealable polyester film No. 20A5 — used in packaging Wilson "Menu-Pak" boil-in-bag entrees for institutional users — is manufactured by Minnesota Mining & Manufacturing Company, 900 Bush Ave., St. Paul 6, Minn.)
Main key

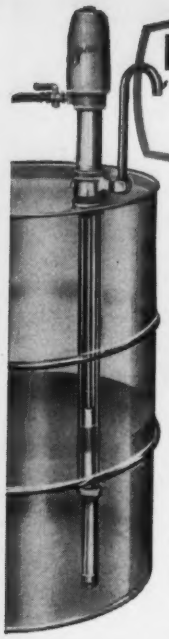
(Burt Simplex hopper-type filling machines are manufactured by F. L. Burt Company, 571 Seventh St., San Francisco 3, California.)
6373 on Reader Service Slip.

(Pack Rite Jaw heat-sealing machines are manufactured by Pack-Rite Machines Division of Techtmann Industries, 407 E. Michigan St., Milwaukee, Wisconsin.)
6374 on Reader Service Slip.

(4) Freezing

(5) Cartoning

(6) Testing



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Say goodbye to spillage and waste, eliminate danger of contamination to your expensive liquids and semi-fluids. Investigate this new *Stainless Steel* air-powered Fast-Flo Pump by Graco!

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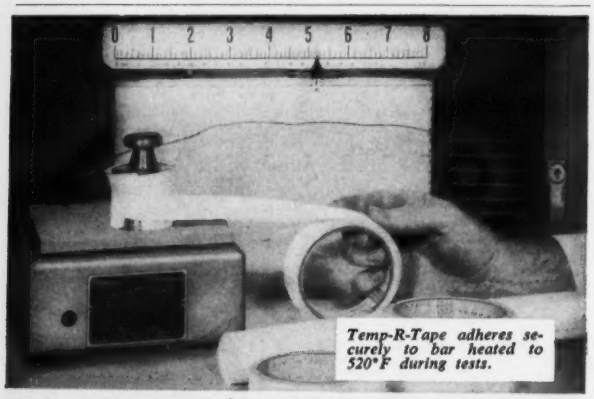

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Temp-R-Tape is available from stock in rolls and sheets. All four types — Temp-R-Tape T; TH; C and TGV — combine some form of Teflon backing with silicone polymer adhesive to provide easy-to-apply pressure-sensitive and thermal curing pressure-sensitive tapes for electrical and mechanical applications. Designed for extreme temperatures, Temp-R-Tapes possess high dielectric strength, low power factor, high elongation, negligible moisture absorption, are non-corrosive and non-contaminating.

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Main Office: New Haven 9, Connecticut

6396 on Reader Service Slip.

packaging

Composite Drums

(*Continued from page* 35)

other specific advantages:

Durable. Inner polyethylene drum component has same specifications as drum liner currently being used inside of steel drums. Molded in one piece, with rugged, simple closures, the polyethylene drums are practically unbreakable.

Outer pack uses wood members reinforced with double-dipped galvanized steel binding wires and staples — making the entire exterior corrosion resistant, and able to stand virtually unlimited high stacking under all outdoor climatic conditions.*

After severe four-ft free fall to steel plate, 55-gal returnable wirebound composite pack, with polyethylene drum inside filled with liquid, shows no damage. Note four-way pallet base

(All containers in the line may be stacked at least 60 ft high, and the 15-gal size reportedly could stack 150 ft high if this were desirable.)

When new container is dropped, it does not deform, nor does liquid escape. As result, all four sizes have been approved for shipment of regulated liquids under M.C.A.-I.C.C. test permit.

Lower cost. Savings in initial cost of new composite packs over conventional lined steel drums are due to lower cost of a wirebound as compared with a steel outer container.

*Ordinarily, exterior need not be treated with a wood preservative, since hardwood generally is not subject to dry rot, and careful grading of material is anticipated prior to box making. Further, since blue stain is not caused by rain, no difficulty is expected here.

Would you like to receive FOOD PROCESSING personally?

It will be sent to you without charge or obligation . . .

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If you are responsible for processing operations in an administrative capacity as plant superintendent, food technologist, chemist, engineer or equivalent responsibility . . . in a plant of substantial operations* where food processing is an important factor . . . FOOD PROCESSING will be sent to you without charge or obligation if you request it. Use form below. In requesting, be sure to answer all questions. If your firm is not rated or listed in standard references, indicate size of the company by capacity, annual sales or number of employees. Unless all information is given, magazine will not be sent.

*"Substantial operations" does not necessarily mean an extremely large plant. But requests for the magazine exceed supply so we must set standards to insure publication being sent where it can be used to best advantage.

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Name _____

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For example, on five-gal size, wirebound outer pack costs about 50 per cent less; on the 15-gal size, reduction is 45 per cent compared with the 24-gage steel drum, nearly 60 per cent less than the 20-gage steel drum.

New container costs 65 per cent less than the 19-gage steel drum in the 30-gal size. In the 55-gal size, the wirebound costs over 40 per cent less than the 18-gage steel drum, over 50 per cent less than the 16-gage steel drum.

Lightweight. Total tare weights of the complete containers are: five gal — 7.15 lb; 15 gal — 13.5 lb; 30 gal — 25.5 lb; 55 gal — 51 lb.

With lightweight inner polyethylene drum in place of standard-wall polyethylene drum, respective tare weights for the 15-, 30- and 55-gal composite containers are 12.25 lb, 22.25 lb and 47.25 lb.

Easy handling. Octagonal shape of 15-, 30- and 55-gal sizes, with sides tangent to wall of interior molded polyethylene drum, provides extra security in handling, allows drums to be stored in about same amount of space needed by comparable-size steel drums.

Octagonal shape, with sides tangent to wall of interior molded polyethylene drum, provides extra security in handling 30-gal size composite pack

Unique feature of 55-gal size is a built-in four-way pallet base, affording easy mechanical handling with conventional fork lift trucks.

New composite containers are available as an assembled unit, or, the inner polyethylene drum may be obtained without wirebound outer container, for insertion into a wirebound container by processor at his plant. (Assembly takes one man min on the 30-gal size.)

(New family of returnable composite shipping containers for liquids — using outer containers designed by Package Research Laboratory, Division of Stapling Machines Company, Rockaway, N.J. — is available from Delaware Barrel & Drum Company, P.O. Box 1648-A, Wilmington, Del.)
6397 on Reader Service Slip.

Sets up 900 boxes/hr semi-automatically

Set-up machine, fed by single operator, transforms flat, knocked-down corrugated boxes into containers which have firmly glued bottoms, open flaps — ready for packing line.

Machine has two heads with mandrels which can be quickly adjusted to accommodate number of different sizes. Also, two different sizes can be run simultaneously.

Complete description and specifications are presented in four-page brochure. Diagrams with floor dimensions are included.

(Brochure on semi-automatic set-up machine for corrugated boxes is available from Gaylord Container Corporation, Division of Crown Zellerbach Corp., 111 N. Fourth St., St. Louis 2, Mo.)
6398 on Reader Service Slip.

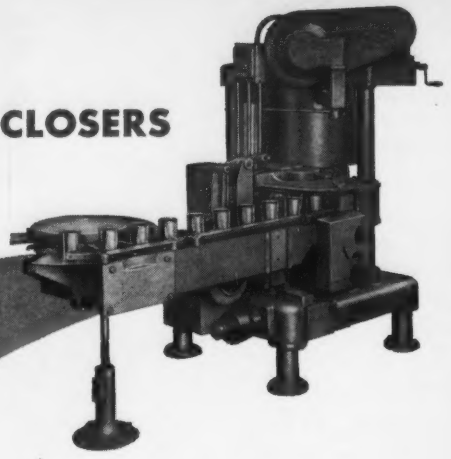
New gravity fillers feature low initial, operating costs

Uses: New line of gravity fillers handle cans, plastic bottles and other standard containers up to one-gal capacity, with a minimum neck opening of 7/16 in.

Features-Description: Operating costs are low as no skilled labor is required. Spout bar adjustment is horizontally

(*Continued on next page*)

ANGELUS CAN CLOSERS



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Minute Maid ® · TEXACO ® · NESTLE ® · AJAX ® CLEANSER · HERSHEY'S ® · Hunt ® · General Mills ®

No better recommendation exists than the list of "blue chip" customers who use one or more models of Angelus Closing Machines for efficient and cost-cutting service.

The performance of Angelus Closing Machines is based not only on top-grade materials and quality of workmanship but on the right design to meet specific production problems. These leading canners know that Angelus, the only company in the world producing can closing machines exclusively, devotes all of its design efforts to create equipment for greatest production efficiency and easiest possible maintenance.

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6399 on Reader Service Slip.

A NEW 4 in 1 FILLER by fmc

High Speed Filling of Juice · Liquid · Syrup · Brine

Illustrated: 307x700 can in filling position

THE FMC 18 VALVE FILLER

FILLS CANS OR JARS—from 202 to 404 diameter, with a minimum number of change parts. It will handle containers from 200 to 800 tall by simple vertical adjustment of filler bowl.

HIGH SPEEDS: up to 400 cpm depending on product and container size. Chain feed, worm timer and tangential take-off contribute to smooth, gentle handling.

HANDLES A WIDE RANGE OF PRODUCTS:

Liquids and juices: including tomato juice, peach and pear nectars, pineapple-grapefruit juice drink, pineapple juice.

Syruping: such as peaches, apricots, pears, fruit cocktail, figs, cherries.

Brining: adds brine to such products as spinach, diced carrots, green beans, peas, small potatoes, dry beans, pork and beans.

HIGH ACCURACY: extraordinary open-vent gravity-type valve design permits the valve's vent tubes to *drain completely* before cans leave the machine, providing greatest accuracy and uniformity of fill at high speeds. Can-lifts give positive, automatic "No Can, No Fill" operation, reducing the problems of spillage and waste. Head space is readily adjusted.

FULL AND COMPLETE DETAILS on this highly versatile FMC Filler will be furnished promptly by your FMC representative. Write or call today.

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FOOD MACHINERY AND CHEMICAL CORPORATION
Canning Machinery Division
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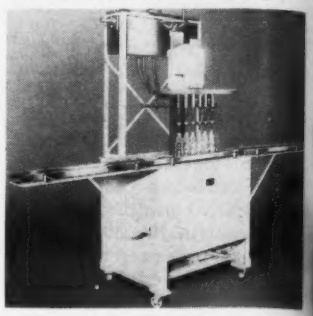
6400 on Reader Service Slip.

(*Continued from preceding page*)



All liquid contact parts are stainless steel

controlled by a simple-to-operate handwheel. Simplicity of spout design permits easy dismantling and cleaning.

Fillers will not collapse or distort containers, and are particularly superior for filling foaming liquids. Spouts are engineered with special seal and drip-proof features, have provision for quick horizontal and vertical change-over.

(Model EGR gravity filler series is manufactured by Ertel Engineering Corporation, 20 Front St., Kingston, N.Y.)
6401 on Reader Service Slip.

Lightweight carboy has resealable closure

Uses: For one-way shipments of food products such as milk or vinegar; also chemicals.

Features: Polyethylene container is enclosed in fibreboard box for convenience in shipping and handling. Heat-sealed to it is modified flex-spout, which uses sealing plug rather than built-in diaphragm.

Description: Bottom and sides of 5 gal container are 12 mils thick; top is 15 mils thick.

(Jasperdrum is a product of Jasper Bag Inc., Dept. KP, 4511 Lorain Ave., Cleveland 2, Ohio.)
6402 on Reader Service Slip.

For more information on product at right, circle 6403 . . . see information request blank opposite last page.

"15% sales increase due largely to Knox-designed jar," says president of leading gourmet foods firm

The handsome fluted glass packages shown above were designed by Knox Glass, Inc. in 1957 for a leading Eastern manufacturer of gourmet foods.*

According to the firm's president:

"Sales increased nearly 15% after changing to the fluted jar which Knox Glass designed exclusively for us.

"The eye-catching salesmanship of the jar, which has no label other than the closure, permits the purchaser a clear, clean view of our appetizing products, such as Potato Salad, Cole Slaw, Macaroni Salad and Vegetable Chow Chow. Knox's strong design and the excellent quality of the glass we buy from Knox, combine to make this a wonderful package.

"We've been a Knox customer for nearly seven years and buy almost exclusively from them. Special quality products such as ours demand high quality glass and exceptional service. This we get from Knox."

Find out more about how Knox can meet your glass container needs — contact Knox Glass, Inc., Knox, Pennsylvania.

*Name available on request.

the new/**KNOX GLASS**

BAG DAMAGE ENDS... *when you use multiwalls made of* CLUPAK* *extensible paper!*

NEW, TOUGHER KRAFT SOLVES BREAKAGE PROBLEMS

New CLUPAK extensible paper offers multiwall buyers a happy choice . . . Because CLUPAK extensible paper has a patented, built-in stretch and "give," it simply absorbs most shocks and strains that rip, split or tear conventional kraft. By specifying CLUPAK in your kraft bags, you solve your breakage problems once and for all. Multiwalls of CLUPAK fill faster, palletize better and handle easier. For special handling problems, CLUPAK can be supplied with a rough outer-sheet to provide far better anti-slide protection for your product.

Millions of these new multiwalls have proved the advantage of this tougher, stronger paper. Plan a trial shipment of multiwalls, made of CLUPAK, as part of your next bag order. See the difference for yourself. Your customers are sure to like the extra service of a better, more dependable bag . . . and so will you.

*Clupak, Inc's. trademark for extensible paper manufactured under its authority and specifications. Clupak, Inc., 530 Fifth Avenue, New York 36, N. Y.

6404 on Reader Service Slip.

New press doubles aluminum can output

Latest step toward full competition with steel cans

Features: High-speed aluminum impact extrusion press produces 11-oz aluminum beer cans twice as fast (120 cans per min vs. 60) as any impact extrusion equipment hitherto available.

The marked improvement in speed was brought about by a new approach to design of the press drive. Similar presses to date have been built on knuckle-joint actions, a type of drive commonly used in coining presses because of great power and dwell developed at bottom of stroke.

However, knuckle-joint action has a rapid approach and rapid return — creating a problem in designing automatic feeds and ejection systems, which must operate during period the plunger is retracted from the die area.

Aluminum beer cans impact-extruded by new high-speed press are examined (right) by Jack Porterfield of Aluminum International and A. S. Burgoyne and B. E. Meyer of E. W. Bliss

New press discards the knuckle-joint action and substitutes an eccentric crank action. Motion of the eccentric crank provides higher impact speed, and allows more time for feed and ejection systems to function.

Description: Press is a straight-side, single-action, 400-ton unit, inclined 13 degrees from the horizontal.

(*Continued on next page*)

specialized

Does business publication advertising pay?

No one is in a better position to give a hard-boiled, practical answer to this question than the men who spend their working lives on the sales front... the men the ads are supposed to help... the men who sell.

Here are the statements of salesmen who know what advertising does for them when it appears in the industrial, trade or professional publications that serve the specialized markets to which they sell:

Bill Kramer
Monsanto Chemical Co.
sells to industry

says Mr. Kramer:

"We make many different chemicals, mostly standardized products that don't have trade names. Many of our chemicals are purchased in small quantities direct and through distributors. So you might think that all I have to sell is price. That's not true. Thanks to our advertising in business papers the name *'Monsanto'* is known to stand for quality products and service.

"We have so many small customers I can't call on all of them, so advertising must carry a large part of the load for the small orders we get from such people which add up to a great deal of tonnage. Advertising also gets across the fact that we warehouse standard chemicals right here in the city and can give prompt service.

"We have such a long list of chemicals that I wouldn't do much of a sales job if I just read the list of chemicals we make on each sales call. So again our company uses advertising to let the people know all the different chemicals we are prepared to deliver. Then we salesmen can concentrate on the individual prospect's immediate requirement.

"Of course you don't always know exactly what chemicals are required by a particular prospect because a company can go into a new product, or a variant of an old one, almost overnight and come up with a need for a chemical he'd never used before. So it's pretty important for our advertising to remind all buyers just what lines we have.

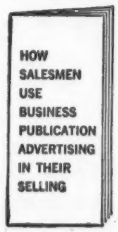
"Although many of our chemicals don't have trade names, we have one silica product that has become known to the trade as *'Santocel'*. Very few people in the trade call this by its proper chemical name — they refer to it as *'Santocel'*. Advertising in the trade papers has created this new name and made it stick.

These are just some of the ways I know advertising is working for me—even while I'm fishing. It calls on people I can't get to see, and calls on the others more often than I can possibly do in person, and suggests new uses for our products."

Ask your own salesmen what your company's business publication advertising does for them. If their answers are generally favorable, you can be sure that your business publication advertising is really helping them sell. If too many answers are negative, it could well pay you to review your advertising objectives — and to make sure the publications that carry your advertising are read by the men who must be sold.

How salesmen use their companies' advertising to get more business

Here's a useful package of ideas for the sales manager, advertising manager or agency man who would like to get more horsepower out of his advertising. Send for a free copy of the pocket size booklet which reports the successful methods employed by eleven salesmen who tell how they get more value out of their companies' business publication advertising.



You can be sure that more of your salesmen will use your advertising after they read how others get business through these simple methods.

The coupon is for your convenience in sending for your free copy.

NATIONAL BUSINESS PUBLICATIONS, INC.

NBP ...each of which serves a specialized market in a specific industry, trade or profession.

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Please send me a free copy of the NBP booklet "How Salesmen Use Business Publication Advertising in Their Selling."

Name _____

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Company _____

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(Continued from preceding page)

Die area of new press. Automatic hopper feed (left) delivers 1/8 in-thick aluminum blanks to the female die, and impact then extrudes blank into 11-oz beer can

Equipped with a variable speed motor, it can operate at any speed between 40 and 120 strokes per min.

Can bodies are made from 2S aluminum blanks 2½ in. in diam by ⅛ in. thick; blanks are fed by means of a hopper feed directly connected to the press drive to assure perfect timing.

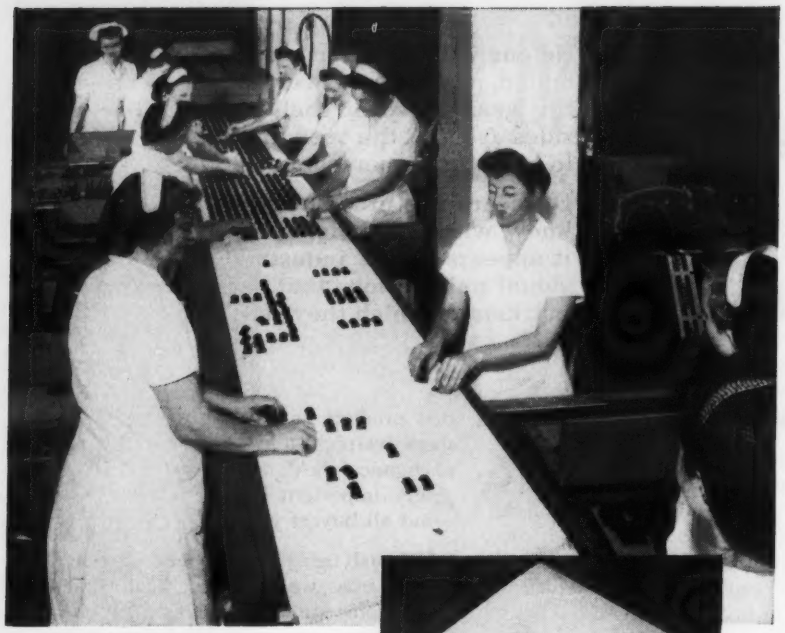
Wall thickness of the extruded can is 0.010 in., while the ribbed, reinforced can bottom is 0.025 in. thick. The extruded can is 5½ in. long by 2½ in. in diam.

Used in conjunction with a continuous strip casting method previously developed by Aluminum International — a jointly owned subsidiary of Adolph Coors Company, Golden, Colo., and Beatrice Foods, Inc., Chicago — the press is expected to make the aluminum sanitary can fully competitive with conventional three-piece steel cans.

(High-speed aluminum impact extrusion press was designed and built for Aluminum International, Inc., by E. W. Bliss Company, Container Machinery Division, 1382 Raff Rd., S.W., Canton, Ohio.)

6407 on Reader Service Slip.

HELP YOURSELF . . . .
For a quick reference to new technical literature available this month, see the classified listing on page 115.



Victor
ROH Belting Has Excellent Resistance to Heat, Food Oils and Commercial Shortenings

Victor Style ROH belting was especially designed for conveying such foods as potato chips, hot bread, fresh fish, processed poultry and meats, freshly baked cookies and crackers – that quickly shorten the life of ordinary types of belting.

In ROH belting, plies of white Hycar impregnated duck are vulcanized together to form a heat-oil-acid resistant belting with a cover so smooth that dirt and food particles can't cling. Easily kept sanitary, too – clean with hot water or steam. Moisture can't penetrate the tough surface and cause checking or rotting. Strictly non-toxic.

Victor Style ROH is made in 2-, 3- and 4-ply thicknesses in widths up to 48 inches and available vulcanized endless or with "laced" joint for almost all food conveying applications. Write today for Circular 22 containing complete specifications and prices of Style ROH – the belting especially designed for the food processing industry.

A COMPLETE LINE, including: Neoprene Belting • Balata Belting • Solid Woven Belting—untreated, impregnated, coated — many widths and plies • Canvas Stitched Belting • Hycar Belting • Belting Specialties

Victor
Balata & Textile Belting Co.
53 Park Place, New York 7 • 300-306 W. Hubbard Street, Chicago 10
Factory: Easton, Pa.

6406 on Reader Service Slip.

cuts · mixes blends
at lightning speed
KOCH Schnellkutter

Does dozens of laborious jobs for the food processor within seconds rather than minutes. Saves time and labor. Produces superior foods. For salads, meat loaves, soups, sauces, fillings, purees, sausage meat, and many other uses.

Capacities range from 25 to 60 quarts in the bowl. Prices from $995 to $2800.

Another instance of Koch leadership in food machinery.

Write today for free bulletin and other data. Also available is Koch General Catalog 177.

KOCH EQUIPMENT CO.

A Division of
KOCH SUPPLIES INC.
2520 Holmes Street
Kansas City 8, Mo., U.S.A.
Phone Victor 2-3788

6405 on Reader Service Slip.

GAYLORD DEPENDABILITY
KEEPS YOUR PRODUCTION ROLLING

You get a clear track to corrugated boxes when you signal Gaylord to start the run. In all lines of industry, Gaylord has a well earned reputation for delivering the packaging . . . so you can package and deliver the goods . . . on schedule.

Regular corrugated containers in big volume runs, or engineered packaging, give your G-Man the green light . . . keep production rolling profitably.

For more information on product at right, circle 6408 see information request blank opposite last page.

CROWN ZELLERBACH CORPORATION
GAYLORD CONTAINER DIVISION

Gaylord Boxes

IN CANADA • CROWN ZELLERBACH CANADA, LTD. VANCOUVER, B. C.

HEADQUARTERS, ST. LOUIS
PLANTS COAST TO COAST

CRCO* DOES IT AGAIN!

*SAY "SEE-AR-CO"

NEW CRCO ADJUSTABLE BAR TYPE BEAN GRADERS

- Available in single or double models
- "Flow Control" adjustable Feed Hopper
- Longer life with low maintenance
- Can be fitted to grade special sizes

Write for Detailed Bulletin.

THE BEST OF Everything

CHISHOLM-RYDER CO. INC.
Niagara Falls, New York
FOR THE FOOD PROCESSOR

6409 on Reader Service Slip.

Continuously packages sliced and blocked cheeses from roll stock

- **Handles products of varying length, width, height without change parts**
- **Easily coordinated to any production-line speed**

Products that are non-uniform in size and shape ordinarily must be hand-wrapped or machine-wrapped with cards or other support.

Completely automatic new unit employs unique method of forming package *independently* of item being wrapped — permitting its use in packaging products of various sizes and shapes without time-consuming parts changes.

Product enters the wrapping cycle on a web of packaging film. As material is pulled along, it is folded naturally over the product, then passes under a back-sealing iron.

After back-sealing operation, product moves along to the end-sealing bars, which are positioned on a constantly rotating drum.

The jaws seal bottom of the first package and top of the second package in one operation. Package is held in the sealing jaws and follows the drum to the discharge conveyor, where it is released. Product never comes in contact with machine parts.

Upon completing sealing cycle, the jaws accumulate in an open position along the rotating drum. Each set of jaws awaits turn to resume sealing operation, the drum in the meantime slipping by these "resting" jaws.

As another product passes through the back-sealer, electric eye control or mechanical timing device releases a set of the waiting end-sealing jaws.

As drum moves, the upper jaw is cammed down over the lower jaw, sealing and cutting at the same time.

Quick adjustment. Package dimension variations are handled simply as follows:

Package height is altered by manipulation of finger wheel that raises or lowers the back-sealing bars; package width simply by installing a different width of film roll.

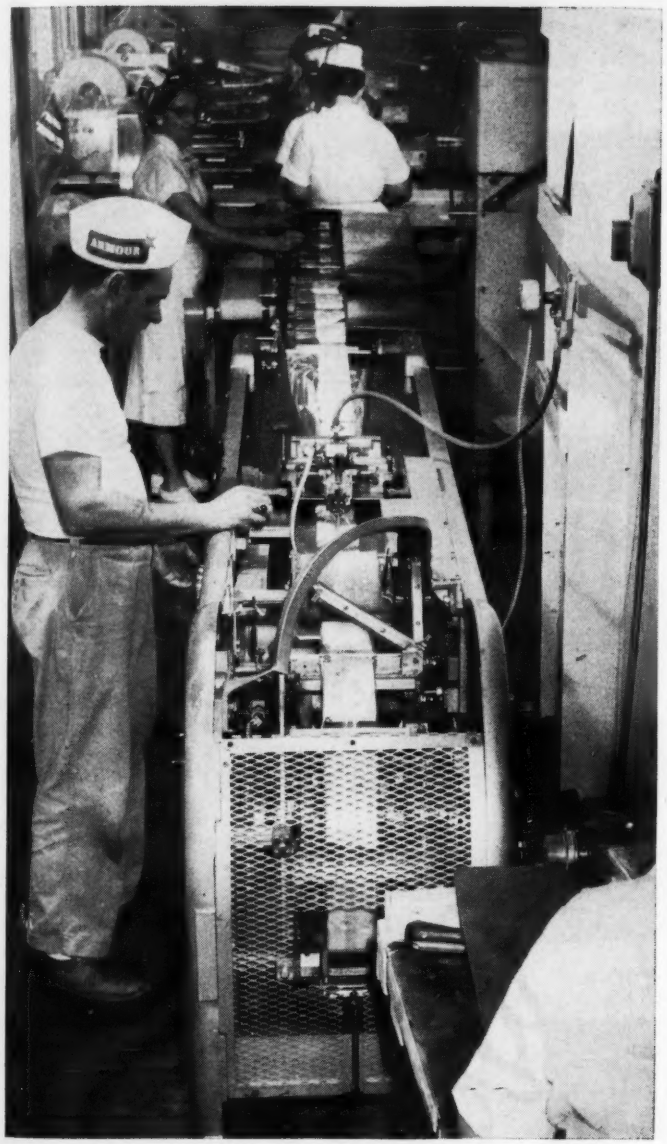
Package length is adjusted either by the setting on a mechanical timer, or by an electric eye which focuses on a printed target on the wrapping material, or on the product itself — permitting the product to determine its own package length.

Unit packages items as small as one in, wide by five in. long, as large as 7¼ in. by 12 in.

Typical installation is at Armour Creameries, Monroe, Wis., where sliced natural cheese is gas-packed on the unit at speeds to 60 packages per min.

However, in other packaging

(*Continued on page 62*)



The RT's long, narrow "profile" makes it ideal for installation in plants where work space is limited

SAVE TIME

(AND MONEY)

WITH THE KETTLE THAT BOTH

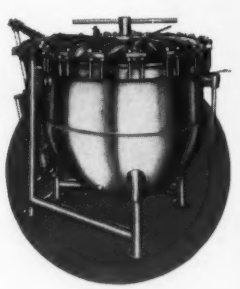
Cooks and Mixes!

GROEN STEAM JACKETED KETTLES

FOR BETTER FOODS

PREPARED FASTER—EASIER

Cut cooking time as much as 50% with Groen steam jacketed kettles. Here is the most efficient method of heat transfer ever developed. No long periods of waiting for proper cooking temperatures—no loss of fuel or power that's dissipated into the open air. The high speed of Groen kettles will preserve more of the flavor and nutrients of any food to be processed from meats to delicate custards and jellies. Groen kettles are virtually self-cleaning resulting in further time and labor savings at clean up time. Groen kettles make it possible to cook two batches in the same time normally required for one. Write for complete information.



Groen also manufactures tanks, coils, vacuum kettles, reaction kettles, revolving pans, tubular heat exchangers, laboratory pilot plant processing units and special equipment to specifications.

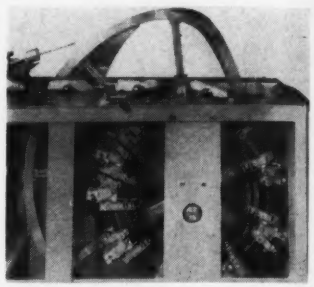
GROEN MFG. CO.

1900 Pratt Blvd., Elk Grove Village, Ill.
30 Church St., New York 7, N.Y.

6410 on Reader Service Slip.

(*Continued from page 60*)

applications, as many as 120 packages per min have been produced, depending upon bag length and material used. (Any heat-sealing material may be used.)



Sealing jaws accumulate on constantly rotating end-sealing drum, where they wait for package. When release mechanism (arrow) is triggered by electric eye, heating bars grip down. Jaws clamp material and advance film as they continue around drum

In various current applications, cost savings between roll stock and the pouches commonly used in semi-automatic methods is about $5 per thousand packages. In addition, further reductions are realized through labor savings.

(Model RT horizontal packaging machine is development of Hayssen Manufacturing Company, 13th & St. Clair, Sheboygan, Wis.)
6411 on Reader Service Slip.

Symposium will consider package design criteria for refrigerated storage

Symposium on "package environment in refrigerated warehouses" will be sponsored by the scientific advisory council of The Refrigeration Research Foundation, 12 N. Meade Ave., Colorado Springs, Colo., at the La Salle Hotel, Chicago, Ill., on March 18-19, 1960.

Among problems to be considered are these: What is extent of container failure in refrigerated warehouses? What products are affected most by package failure, and what packaging material is most responsible?

Also, what are the stresses

WHO SWIPED PAGE 61

D'ja ever pick up a copy of FOOD PROCESSING with an article torn out . . . or even worse, HALF an article torn out?

It's liable to happen when copies are routed around your plant.

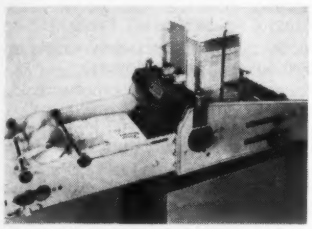
You can avoid this annoyance by getting your own copy of FOOD PROCESSING each month. It's easy and there is no charge. Just fill in the subscription request form opposite the inside back cover.

on packages when a warehouse is in operation, and stresses when a warehouse is closed for the night? How do foods in refrigerated storage influence package stability (what by-products of their living process still continue?) Do meat and dairy products act differently than fruits and vegetables?

For additional information, write Dr. Walter A. Maclinn, director and secretary of The Refrigeration Research Foundation.

Imprints cartons in flat at speeds to 350/min

Magazine-fed and foot-pedal controlled, new machine imprints code-dates, lot- or control-numbers in any location on folding carton surface in the flat at speeds to 350 per min.



Coder handles almost any shape carton from ¾ by 2 in. to 8 by 12 in.

("Cartoncoda" machine is development of Adolph Gottscho, Inc., 6 Evans Terminal, Hillside 5, N.J.)
6412 on Reader Service Slip.

For domestic shipment of all granules and powders

Features: New sift-proof corrugated box has corrugated pour spout that opens and closes smoothly, and even locks into position when opened.

Adaptable to conventional automatic packaging equipment, box is filled from the bottom or non-pour spout side.

Description: Box corners are sealed for sift-proof pack-

(*Continued on next page*)

the first glass
container to
enter your lines
will, if it's
Tygart Valley
quality, be exactly
like the last
one off the lines

Uniformity is the key to Tygart Valley quality in glass containers

SYMBOL OF QUALITY · GLASS CONTAINERS

BROCKWAY GLASS
COMPANY, INC., Brockway, Pennsylvania
Sales Offices in Principal Cities
SUBSIDIARIES: Demuth Glass Works, Inc., Parkersburg, W Va.
Tygart Valley Glass Co., Washington, Pa.

6413 on Reader Service Slip.

Dairy skims $800 off monthly steam bill

The first 8 months after installing two 200-hp Cleaver-Brooks boilers, United Farmers of New England, Inc. in Charlestown, Mass., saved more than $6,100 in operating costs

Up until November, 1958, the United Farmers' plant in Charlestown, Mass., operated with two coal-fired boilers that demanded the labor of four men.

Then, two 200-hp heavy-oil-fired Cleaver-Brooks 150-lb. boilers were installed. And from December, '58 through June, '59, the new CB boilers produced the steam needed for pasteurization, cleaning and heating . . . saving about $800 a month. When you think it over, that amounts to a lot of milk business, even for New England's largest dairy marketing co-operative.

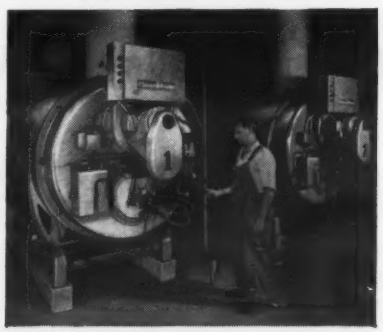
Modern Cleaver-Brooks packaged boilers offer many advantages in addition to high operating efficiency. They operate for months without the need for cleaning . . . keep working areas spotless. CB boilers are quiet and fully automatic. And they're far more compact than older units. By replacing the old coal-fired boilers with CB units, the company made room for a new transformer vault to provide additional electrical capacity. And the old coal storage area now houses a new 10,000-gallon oil storage tank.

The many advantages of Cleaver-Brooks packaged boilers are no revelation to United Farmers, however. They installed their first CB boilers back in 1946, and now have Cleaver-Brooks boilers in 6 plants in Vermont, New Hampshire and Massachusetts.

For complete information on Cleaver-Brooks packaged boilers, contact your representative or write direct to Cleaver-Brooks Co., Dept. B, 357 E. Keefe Ave., Milwaukee 12, Wisconsin.

Cleaver Brooks

ORIGINATOR AND LARGEST PRODUCER OF PACKAGED BOILERS



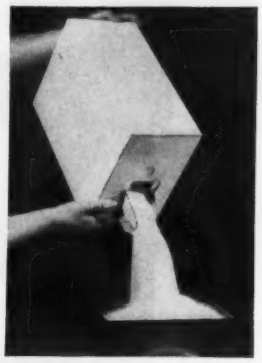
6414 on Reader Service Slip.

packaging

(*Continued from preceding page*)

aging by knife-cutting the flaps shy of the scores instead of using conventional slots. Flaps then are sealed with glue.

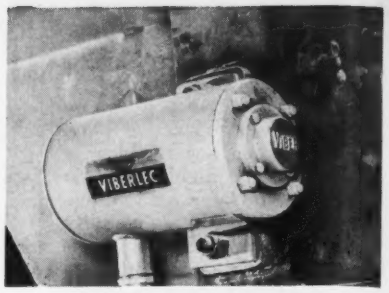
Rectangular box stacks for store display and easy display set-up. Surface lends itself to fine color printing.



Spout permits controlled dispensing of contents

(Sift-proof corrugated box with pouring spout is development of Continental Can Company, Fibre Drum and Corrugated Box Division, 100 E. 42nd St., New York 17, New York.)
6415 on Reader Service Slip.

"What kind of a report is this, 'The tutti needs more frutti'?"



Quick-change mounting plate facilitates multiple use of Viberlec vibrator.

Speed the flow of bulk materials!

Viberlec Vibrators increase production...lower operating costs!

Most efficient and economical movement of bulk materials is provided by Viberlec electric external vibrators—from the finest powders to large solid pieces—through bins, chutes and hoppers.

Compact, powerful Viberlec vibrators offer many advantages:

- Practically silent operation — little or no annoyance to employees.
- Vibrated material may be hot or cold, under pressure, vacuum or controlled humidity. It may be sterile, toxic or protected by an inert atmosphere.
- Operating parts, sealed in steel are *not* affected by dust, moisture, water, humidity, corrosive or contaminated air.
- Rugged construction for years of service.

10′ cord and switch with thermal overload protection are included.

WRITE TODAY for full information!
VIBER COMPANY 726 S. Flower St. Burbank 57, California

VIBER CO

Pioneers and leaders in the manufacture of
VIBRATORS

6416 on Reader Service Slip.

Blow empty cans to fillers at 60 mph

- **No line jams**
- **No can damage**
- **Little maintenance**

WM. O. HEINBAUGH, Plant Manager
IXL Food Company
as reported by **KARL ROBE**

Problem: IXL Food Co., canners of ravioli, tamales and other specialty foods at San Leandro, Calif., were hand-feeding cans at end of their 401 diam line.

This created congestion in the processing area, so it was decided to move empty-can feed operation to warehouse.

Solution: At about this time a prototype air runway system was being developed. IXL contracted to try it. Runway is enclosed on all sides, and comes in prefabricated sections.

Installation is simple: the 10-ft sections are bolted together, and entire 55-ft length was hung from ceiling on 10 hangers.

Cans enter runway from warehouse area via a 12-ft high air elevator. At bottom of enclosed stainless steel elevator column, a 5-hp motor and blower furnishes air which lifts the cans.

Cans ride gently and rapidly upward on stream of air, directly into the air runway.

Air stream from elevator travels through runway, furnishing the main energy for the air conveyor system. An auxiliary blower (one hp) is used on the runway itself. On shorter runs of up to 45 or 50 ft, no auxiliary blower would be needed.

Top of runway and side of elevator are hinged for easy access to change can sizes. System at IXL is adjustable to handle 401 x 602, 401 x 411, and 309 x 404 sizes. Changeover takes only a few minutes.

Handling rate on 401 x 602 size is 120 cans per min. Capacity is practically unlimited, however. Cans travel 12-ft elevator and 55-ft runway in seven seconds, at rate of approximately 60 mph.

An electronic can flow detector at discharge end of runway senses presence of stationary cans. When cans back up to detector, a controller energizes a magnetic can stop at elevator, preventing cans from entering until production resumes.

Results: Air runway gives two important advantages: trouble-free operation and substantially lower maintenance costs. Cable line, for instance, would require replacement of cable about every

(*Continued on next page*)

Air runway (from top right) handles cans fast, gently, without jams

RF&C (Rubber Filled and Covered) belting was designed to withstand water, and weather, acids, and a lot of abrasive wear and still stay pliable in cold temperatures down to 40 BELOW ZERO. Its base is our famous solid woven cotton belting and covers are available in several finished materials including natural rubber, neoprene and Buna N in a wide range of thicknesses and widths.

FREE 4 PAGE FOLDER
Write for new folder completely describing RF&C Belt.

BUFFALO WEAVING AND BELTING CO., INC.
204 CHANDLER STREET BUFFALO 7, NEW YORK
NEW YORK • CHICAGO
We also manufacture a complete line of WEBBINGS & PURE SHEET RUBBER

6417 on Reader Service Slip.

High speed, automatic BARTELT filler

for
Granulars
Powders
Liquids
Pastes

PRECISION BUILT FOR FAST, ACCURATE FILLING

Here are a few pertinent facts you should know about the Bartelt Filler: (1) SPEED . . . up to 120 fills per minute depending on the fill qualities and characteristics. Split fills can more than double this speed. (2) ACCURACY . . . variation no more than 3% (plus or minus 1½%) on most products. (3) VERSATILITY . . . *One* Bartelt Filler will handle granulars, powders, liquids, and pastes by means of interchangeable tooling. It can be applied to all types of operation . . . from hand lines to automatic packaging machinery. Fill quantities can be varied from one gram to five pounds.

Write Today for NEW Filler Catalog

BARTELT ENGINEERING COMPANY
1900 Harrison Ave., Rockford, Ill. • New York Office: 370 Lexington Ave. NYC

6418 on Reader Service Slip.

(*Continued from preceding page*)

three or four years, depending on amount of use.

Bearings, idlers, and sprockets in cable line all require periodic lubrication, repair, adjustment and eventual replacement. In contrast, air runway and elevator each have only a motor-blower as moving parts, with expected service life of many years.

Annual replacement of elevating belts is eliminated.

Stainless steel guides in runway and air elevator require no corrosion treatment, will last indefinitely without replacement.

Cans enter system through self-contained air elevator that quickly adjusts to new can sizes

Can quality is higher since no cable cutting of bottom flange is possible. Can scratches from broken or frayed cable lines is avoided.

Can flow controller eliminates jams in elevator. Cans roll on sides in runway so there is no can-tipping problem, and no jams have stopped production.

(Peco air elevator, air runway, can flow controller and magnetic can stop are products of Peco Corp.—formerly Peerless Equipment Co.—111 Ortega Ave., Mountain View, California.)
6419 on Reader Service Slip.

HELP YOURSELF . . . .
For a quick reference to new technical literature available this month, see the classified listing on page 115.

extra service without extra cost

LA PORTE FLEXIBLE STEEL CONVEYOR BELTS

IN every process, La Porte out-performs and outlasts other types of conveyor belting. It firmly grips the friction drum or La Porte Sprocket to eliminate *creeping, weaving* and *jumping.* It has a perfectly flat surface for handling all types of containers, empty or filled. Open mesh feature provides for circulation of air, heat, cold or moisture around products in process. Also facilitates cleaning or sterilizing with steam or scalding water while in motion. Highly resistant to heat, cold, oils, brine. You get more for your money in a La Porte.

If you freeze, can, dehydrate, pickle, package, store or ship food, it will pay you to use La Porte belts. Available in ½" x 1", or 1" x 1" in any length and practically any width. Ask your mill supplier or mail coupon for illustrated literature and prices.

MAIL COUPON TODAY

LA PORTE MAT & MFG. CO.
Box 124 Dept. A
La Porte, Indiana

Please send free literature on your Conveyor Belt.

NAME_____

ADDRESS_____

CITY_____ STATE_____

6420 on Reader Service Slip.

Feeds and weighs over 3000 lb per minute

For continuously weighing and feeding dry materials, feeder has accuracy of ± one per cent by weight within range. It has positive drive on belt to prevent slippage, sampling gate and 100:1 variable-speed transmission for wide range.

Heart of feeder is mechanical controller, a device which quickly responds to weight deflection and automatically opens or closes feed-control gate.

Feeder is fully discussed in four-page bulletin which illustrates its features with cutaway view and other illustrations. Also included are installation photographs, dimensional drawings and list of accessories.

("Hi-Weigh Belt Gravimetric Feeder," Bulletin 35.20-2, may be obtained by writing B-I-F Industries, Inc., 345 Harris Ave., Providence, R.I.)
6421 on Reader Service Slip.

New drive simplifies screw conveyor operation

Features: Compact helical gear drive has removable drive shaft. By means of a quick snap ring arrangement, on many applications, shafts can be removed without disturbing reducer or screw.

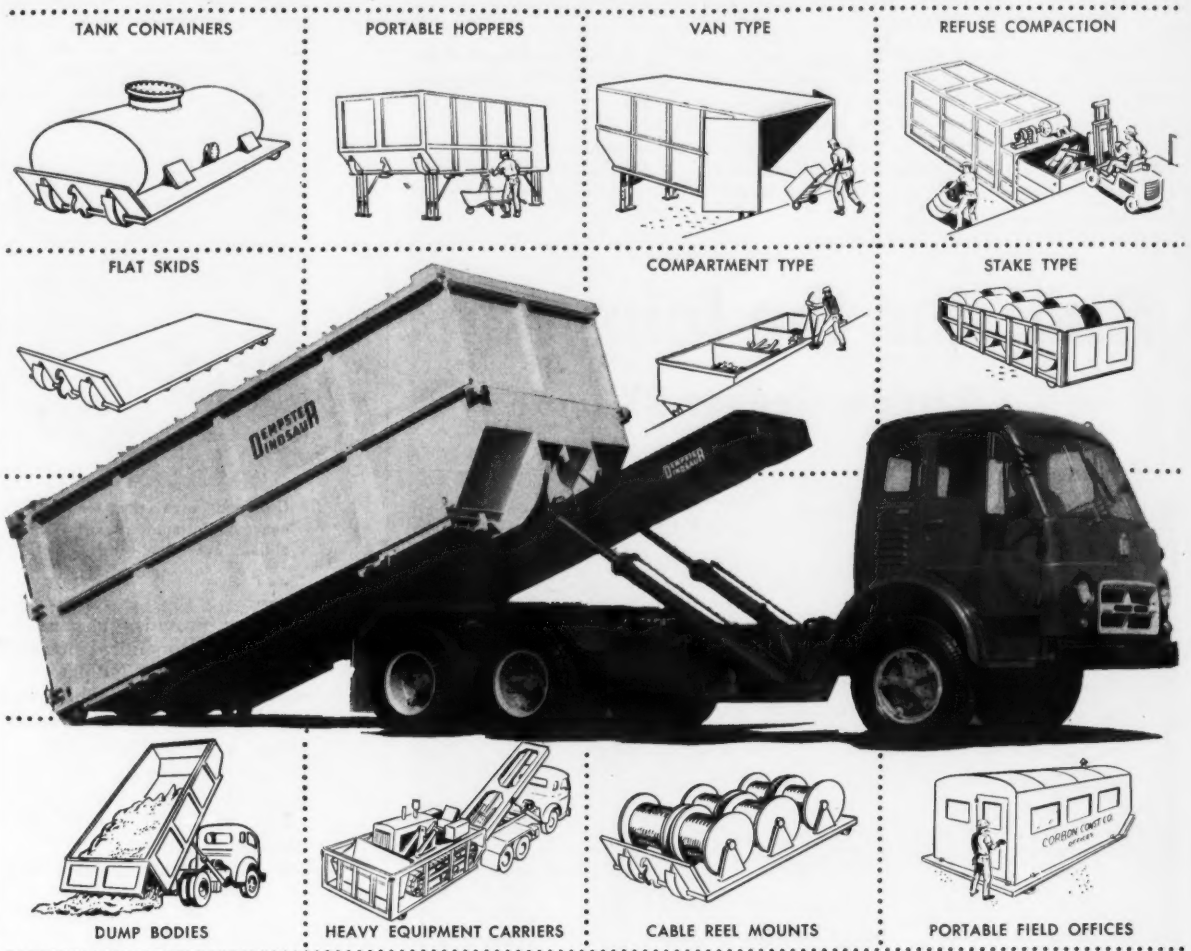
Tapered roller bearings in unit absorb thrust from the screw conveyor — eliminating need for thrust bearing on trough end.

Description: Drives are manufactured in six sizes, each with ratios of 4:1, 9:1, 14:1 and 24:1 — assuring correct selections for all conveyors requiring one-half to 30 hp.

Trough ends, available in eight sizes, from six to 20 in., bolt to any standard trough. Choice of seals (waste packing, felt seal or lip seal, either leather or Neoprene) is offered between conveyor and reducer, to suit the conveyed material.

(*Continued on next page*)

One DINOSAUR With Detachable Containers Solves Many Complex Materials Handling Problems



Patents Pending

Here's the materials handling tool that takes up where the fork-lift truck leaves off. Gigantic loads can be placed on skids, in tanks or containers. The DEMPSTER-DINOSAUR picks them up . . . automatically . . . in seconds . . . and whisks them to their destination, in-plant or to over-the-road locations. Here they are put down, intact . . . pushed off on a dock . . . left on telescopic legs . . . or dumped.

One truck handles any number of containers of many types. Value of truck is multiplied . . . standing-idle time is eliminated . . . loading and handling is cut to the minimum. One man, the driver, handles the all-hydraulic operations without leaving the cab.

Containers available up to 40 cu. yds. and over . . . loads are limited only by the capacity of the truck. If you have a special problem send it in.

Write for FREE BROCHURE

DEMPSTER BROTHERS
Inc.
Knoxville 17, Tennessee, Dept. FP-2

To: DEMPSTER BROTHERS, Dept. FP-2
Knoxville 17, Tennessee
Please send free Dinosaur Brochure
Name _____ Title _____
Firm _____
Address _____
City _____ State _____

6422 on Reader Service Slip.

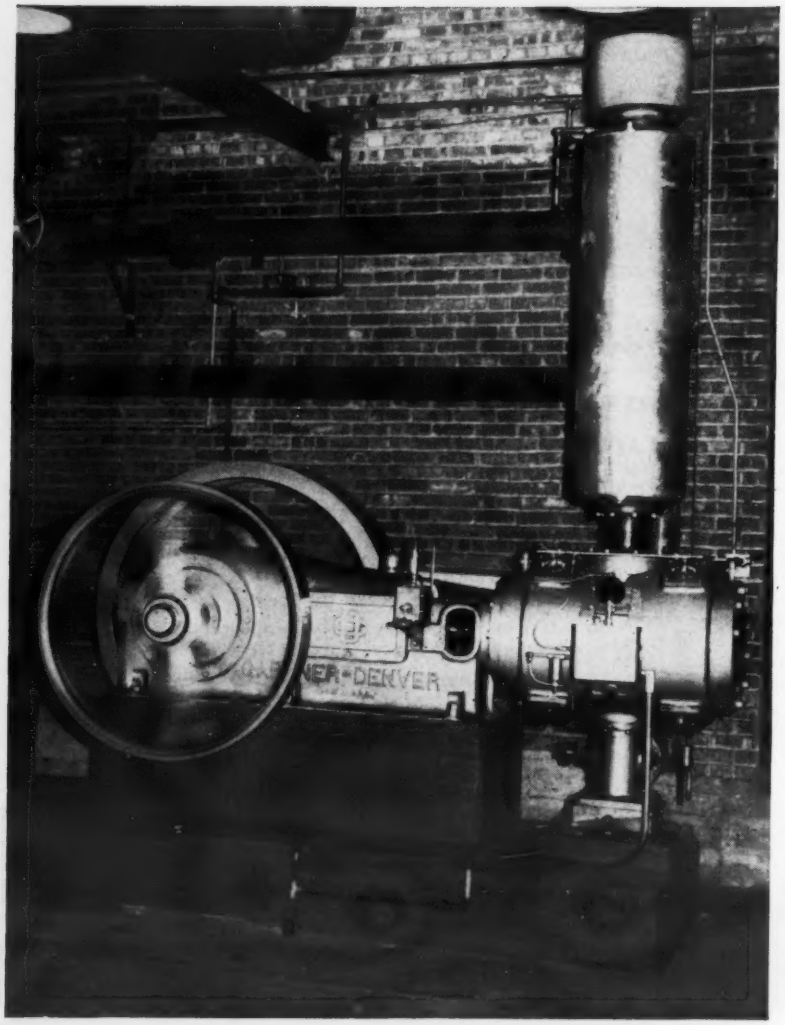
EQUIPMENT TODAY FOR THE CHALLENGE OF TOMORROW

GARDNER DENVER

For continuous compressed air power, install the Gardner-Denver RX compressor. It assures years of reliable service . . . requires only routine attention. The sturdily engineered, dirt-free power end—that's one reason. And behind the scenes at Gardner-Denver, cleanliness in every step of assembly is another key to endurance. Rigorous testing assures years of efficient, trouble-free performance. Get the full story on RX superiority for 'round-the-clock service. Write for Bulletin HAC-40. Gardner-Denver Company, Quincy, Illinois.

Built for the long run

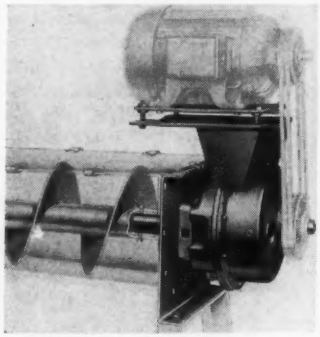
Gardner-Denver RX



6423 on Reader Service Slip.

(*Continued from preceding page*)

Various drive assemblies can be furnished from stock. The basic drive (reducer with drive shaft and seal housing) can be combined with standard trough end, as well as with company's unique new all-steel, pre-drilled Motor Mount.



Designed especially for screw conveyor installations, drive simplifies operation and maintenance

Latter provides a convenient and economical method of mounting any NEMA foot-mounted motor within the rated capacity of the reducer.

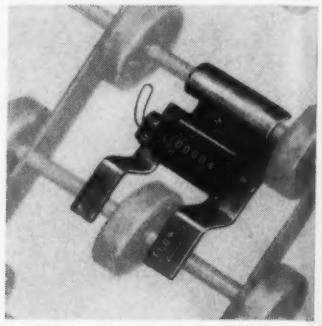
(New Falk Screw Conveyor Drive, in six sizes, is manufactured by The Falk Corporation, 3027 W. Canal St., Milwaukee 1, Wis.)
6424 on Reader Service Slip.

Little device does big job where it counts

Features: Mechanical case counter, capable of counting up to 99,999, will fit any standard straight section or curve of wheel conveyor on 3-in. centers, except conveyor 24-in. wide, with 28 wheels per ft.

Description: An arm, fastened to the counter shaft, records each case by turning counter shaft when a case depressed the arm. In all installations, there must be at least a two-in. separation between cartons to get an accurate count.

In some cases, suitable separation may be achieved by increasing the pitch of one section of conveyor in the line and placing the counter near the lower end of that section.



Counter is installed from top of conveyor, as illustrated

Ordinarily, recommended locations for installation of the counter include: the beginning of the line where loading is accomplished, after a power conveyor, or on a curve.

(Mechanical case counter is manufactured by The Rapids-Standard Co., Inc., 342 Rapistan Bldg., Grand Rapids 2, Mich.)
6425 on Reader Service Slip.

Progress in pneumatic bulk handling

Case histories illustrating recent advances in handling of bulk materials by adaption of pneumatic equipment — replacing old-fashioned "brigade" operations — are subject of 8-page technical report.

Cases cited concern installation for unloading and handling bread flour, mixed feed, barley, wheat shorts, bran, dehydrated alfalfa, hominy, gluten feed, matzo meal, sugar, malts, grits, etc.

Nineteen photographs show a wide variety of equipment in operation in several industries including brewing, animal feeds, food processing and others.

("New Twists in Tubes Speed Bulk Handling", Technical Report ER-G-6, is available from Fuller Company, Catasauqua, Pennsylvania.)
6426 on Reader Service Slip.

New Developments in fork lift trucks

"Big lift" for incoming produce unloads a truckload at a time. Average load weighs about nine tons

Transfers produce to storage at nearly truckload-per-min rate

Big lift truck with 'jumbo' fork attachment cuts unloading time as much as 80 per cent

MORE than 10,000 carloads of produce, worth approximately $10 million, are handled annually at the Salinas, Calif., plant of Growers Vacuum Cool Company, which cools produce for 10 growers in the area and ships throughout the US and Canada.

By replacing a fleet of smaller lift trucks with one specially equipped 11-ton-capacity lift truck and one eight-ton-capacity truck, company has reduced unloading time 80 per cent and cut manpower costs in half.

Additionally, because of the gentle large-scale load handling, Growers estimates a produce-damage saving of about $12,500 per yr.

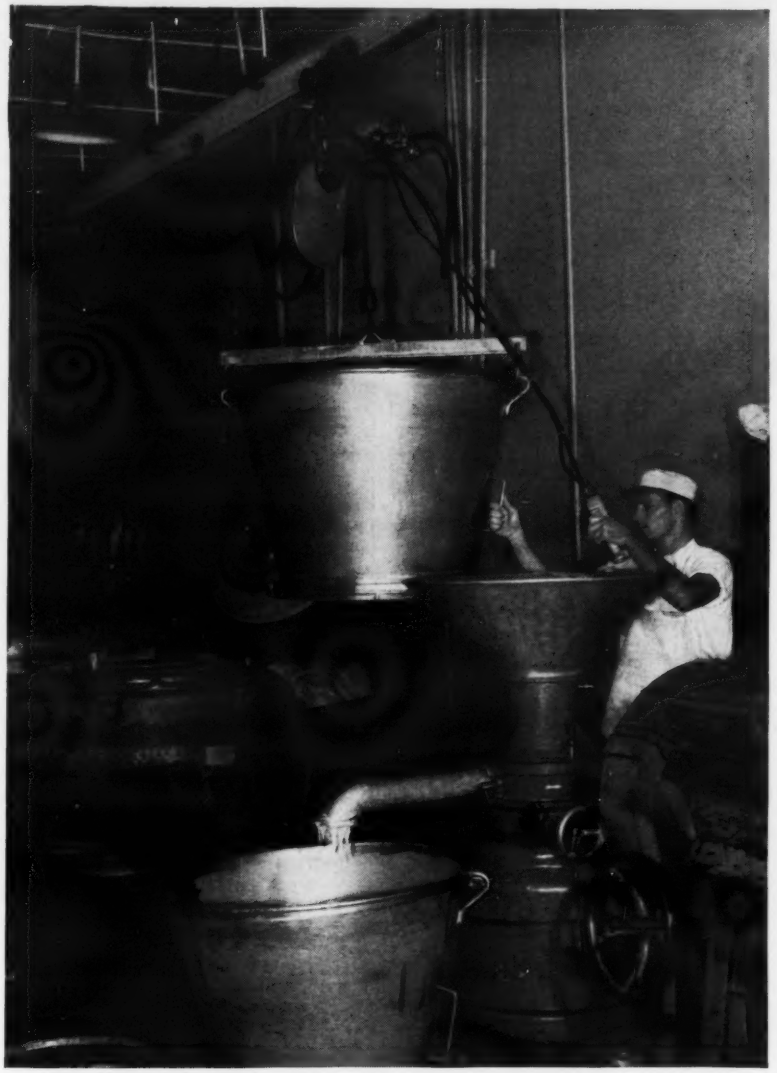
The larger of the two lift trucks — equipped with 10-tined, 96-in. forks — is used to unload highway trucks, carrying ten 4 by 4 ft pallets from receiving to temporary storage. Unloading is fast — averaging four highway trucks unloaded every five min.

The eight-ton-capacity lift truck is used within the plant, for transporting half-a-truckload at a time to dollies that carry the produce into vacuum cooling chambers.

When the plant processes 100 carloads per day, larger

(*Continued on next page*)

Eight-ton capacity lift truck removes a five-pallet load of lettuce (arrows) for transport to production area



One-man way
to move sausage faster

Easy does it. One man easily guides this 750-lb.-capacity slide bottom sausage dump bucket, with a ½-ton Gardner-Denver air hoist doing the work. This is but one of a complete line of Gardner-Denver air hoists (from 150-lb. to 2-ton capacity). All of them give you the lift you need when you need it—safely, swiftly, economically. All have a sealed-in, air-powered motor that dirt, dust, heat and moisture will not affect. Write for Bulletin 86-1.

EQUIPMENT TODAY FOR THE CHALLENGE OF TOMORROW

GARDNER-DENVER Since 1859

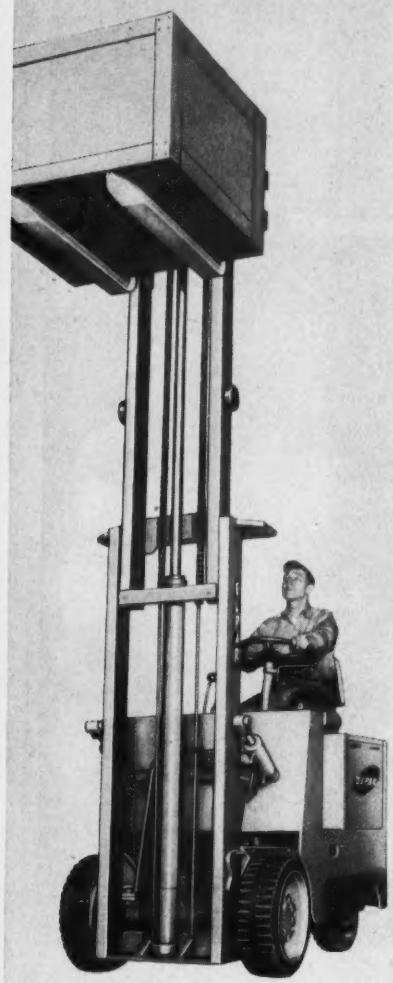
GARDNER DENVER

Gardner-Denver Company, Quincy, Illinois

In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

6427 on Reader Service Slip.

ACRO-SMOOTH



Slashes Truck Maintenance 55%

• A new concept in truck design . . . with step-less speed control . . . demountable electrical and hydraulic controls . . . easier service accessability . . . plus, a host of other important features that can halve your maintenance. Eliminate accidents . . . increase work output with ELPAR's new "Acro-Smooth", 4,000, 5,000, 6,000 and 7,000 lbs. capacity.

Write for Complete Details Today!

ELPAR ELECTRIC TRUCKS

THE ELWELL-PARKER ELECTRIC COMPANY

4003 ST. CLAIR AVE. • CLEVELAND 3, OHIO

6428 on Reader Service Slip.

(Continued from preceding page)

lift truck makes about 200 round trips daily, smaller lift truck about 400 daily.

In the previous system, seven one- or two-pallet lift trucks were used to unload each highway truck, and seven in-plant trips instead of two were required to deposit a single truckload of produce on the vacuum cooler dollies.

Thus, the new system eliminates an expensive unloading-production bottleneck, and corrects a serious traffic and safety problem for lift trucks operating within and around the plant.

Truck unloading time is cut as much as 80 per cent, and manpower costs reduced almost 50 per cent.

(Gerlinger Model L-22 eleven-ton-capacity lift truck, equipped with 10-tined, 96-in. forks, and Gerlinger Model S-16 eight-ton-capacity lift truck are manufactured by Towmotor Corporation, 1226 E. 152nd St., Cleveland 10, Ohio.)

6429 on Reader Service Slip.

For training drivers of industrial trucks

Training industrial truck operators to be good drivers pays many dividends in overall plant operations. 20-page booklet is a complete training program for operators.

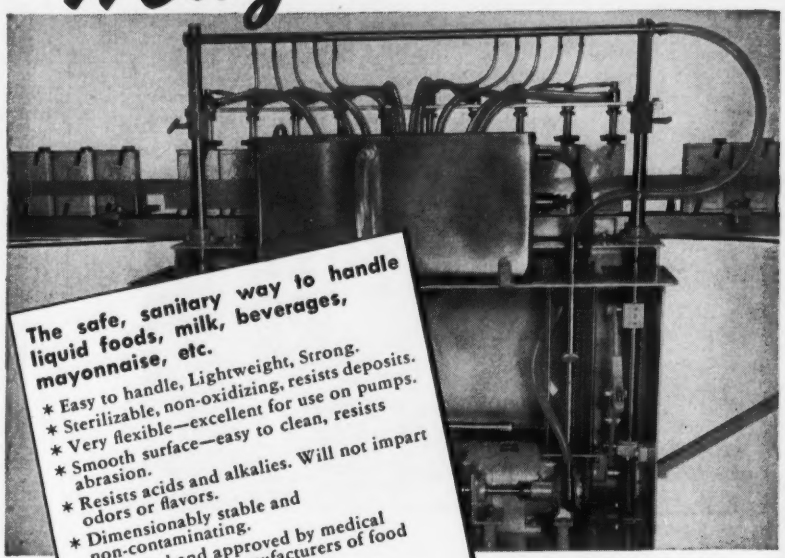
An instructors' manual, it is divided into six parts: theory of operation, good driving practices, details of construction in principal types of trucks, practical operation of trucks. Manual concludes with demonstration test and written examination for driver trainee.

Safety cartoons and illustrations of fork trucks with various attachments are included.

("Instructors' Manual", Bul 7001-M, 20 pp, is available from Automatic Transportation Company, Division of The Yale & Towne Manufacturing Company, 149 W. 87th St., Chicago, Ill.)

6430 on Reader Service Slip.

Mayon CLEAR, NON-TOXIC VINYL FOOD TUBING



The safe, sanitary way to handle liquid foods, milk, beverages, mayonnaise, etc.

* Easy to handle, Lightweight, Strong.
* Sterilizable, non-oxidizing, resists deposits.
* Very flexible—excellent for use on pumps.
* Smooth surface—easy to clean, resists abrasion.
* Resists acids and alkalies. Will not impart odors or flavors.
* Dimensionally stable and non-contaminating.
* Endorsed and approved by medical authorities and manufacturers of food processing equipment

Available ⅛" thru 2½" internal diameter

Mayon plastic food tubing as used on the Biner Ellison Straightline Vacuum Filler.

SEND FOR CATALOG AND PRICE LIST

MAYON PLASTICS
415-17TH AVE. NO. • HOPKINS, MINN.
Phone: WEst 5-2187

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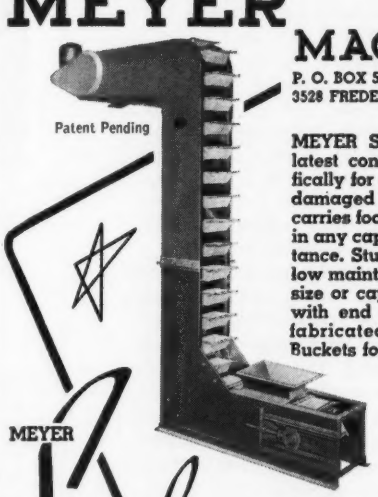
MEYER MACHINE COMPANY

P. O. BOX 5096 • • • PErshing 4-5151
3528 FREDERICKSBURG RD. • SAN ANTONIO 1, TEXAS



MEYER SIMPLEX CONVEYING ELEVATORS are the latest concept in materials handling. Designed specifically for conveying materials that are easily broken or damaged in handling, the SIMPLEX gently and efficiently carries food products, small metal parts, bottle caps, etc., in any capacity, to any desired vertical or horizontal distance. Sturdily built for Round-the-Clock operation and low maintenance, the SIMPLEX can be furnished in any size or capacity to meet your specific needs. Available with end or multiple side discharges and with either fabricated Stainless Steel or cast Aluminum alloy Buckets for sanitation and long life.

• SAFE
• DURABLE
• SANITARY

WRITE FOR BULLETIN 910

Simplex CONVEYING ELEVATORS

Available with

VIBRA-FLEX FEEDERS and HOPPERS . . TO ASSURE A UNIFORM FLOW OF MATERIAL

The built-in Adjustable VIBRA-FLEX Feeder, above, is used when SIMPLEX is fed from a holding bin. The Portable VIBRA-FLEX Feeder and Hopper, left, is used when manual feeding is desired. Feeding rate on both are adjustable.

6432 on Reader Service Slip.

Helpful facts on woven cotton belting

Solid-woven cotton belting is a single, integral belt, firmly woven into balanced, continuous construction. Basic belting may be applied to diversified and specialized uses by impregnation with numerous materials or by bonding or stitching it with various types of cleats.

Eighteen-page manual which fully describes belting gives standards and characteristics for untreated as well as treated belting.

Such data as number of ply vs. thickness, weight, tensile strength and elongation, load factor, temperature resistance and coefficient of friction are tabulated.

Applications are listed and illustrated by photographs. Helpful suggestions for better belt care also are included.

("Solid Woven Cotton Belting," Handbook, may be obtained by writing to Woven Fabric Belting Manufacturers Association, 11 West 42 St., New York 36, N.Y.)
6433 on Reader Service Slip.

Automatically spaces, vertically lifts, discharges up to 20 cases per min

Features: New, index-type vertical conveyor handles either one or two packages per carrier at a vertical speed of 90 fpm.

Simple pushbutton arrangement permits change from a one-package-per-carrier operation to a two-package system. Unit can receive from a conveyor on which packages are accumulated end-to-end.

Description: Unit permits handling wide variety of packages, ranging from 10 to 15½ in. in width, 12 to 36 in. in length, seven to 15 in. high and up to 180 lb per carrier.

Self-supported floor-mounted unit features removable lightweight protective enclosure sections.

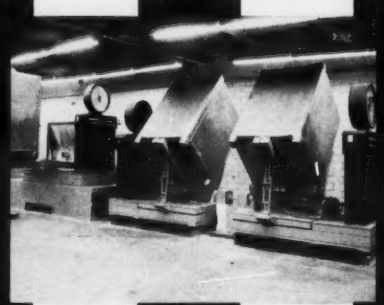
New lightweight cantilevered carriers are diagonally braced to allow for heavy

(*Continued on next page*)

BULK HANDLING PROBLEMS SOLVED:

the EFFICIENCY of "automation" + the FLEXIBILITY of unit containers =

TOTE* SYSTEM



Compare Tote—a complete, mechanical, automatic bulk handling system based on metal containers plus filling and discharging equipment—with a "push-button" fixed storage bin system. You'll find that Tote offers the advantages you want:

- Compact storage
- Surge capacity between processing and packaging operations
- Accurate and automatic weighing and blending

The labor cost of operating a Tote System is no greater, while the *installation cost of a Tote System is much less.*

IN ADDITION, Tote System retains the flexibility of unit containers:

- *Flexibility in Transportation:* Tote Bins can be shipped by rail or truck, or they can be retained in the plant and filled from bulk hopper cars or trucks.
- *Flexibility in Plant Layout and Procedures:* Tote System can be adapted easily to future requirements. Plant layouts can be changed simply by re-locating discharge stations. Operations can be expanded merely by procuring additional Bins. And the Bins can be used interchangeably for different products.

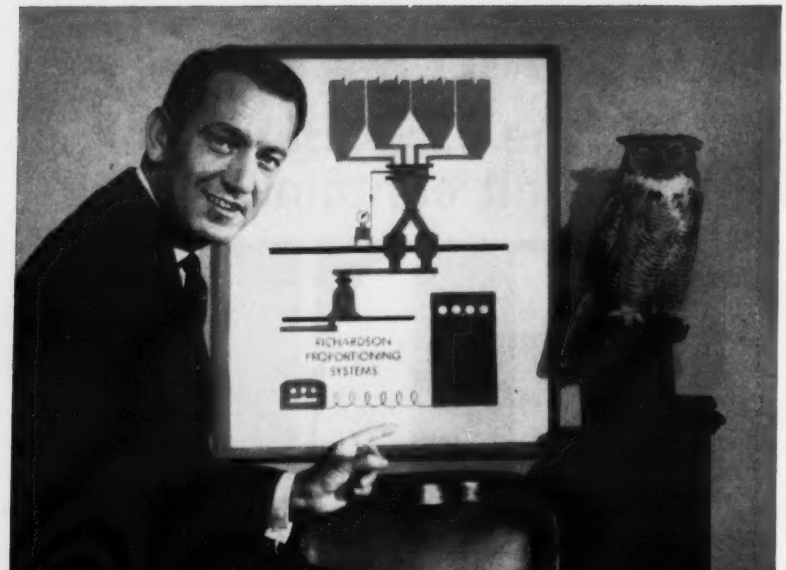
Why not let our engineers survey your plant at no obligation? Meanwhile, write for new catalog containing complete details.

TOTE SYSTEM, INC.

850 So. 7th, Beatrice, Nebraska

*Tote and Tote System Reg. U.S. Pat. Off.

6434 on Reader Service Slip.



You can automate from bin to batch with Richardson equipment

Whether your requirements are large or small, a Richardson Select-O-Weigh automatic proportioning system offers you the advantages of – **1.** Savings in labor costs. **2.** Increased productivity. **3.** Quality control. **4.** Better housekeeping. **5.** Permanent printed records. Incorporated into and governed by a Select-O-Weigh System are such units as –

Feeders – Designed to handle your material quickly and quietly – hundreds in use on all kinds of products.

Scales – Richardson Automatic Scales are known for speed and dependability. Any number can be remotely controlled by a Select-O-Weigh system.

Controls – Program your production and processes by punched card, formula board, formula capsule or weight-selector verniers. Only Richardson offers all four. Control is from a single electronic panel board, operated by one man. No special training is required.

Readout–Richardson furnishes counters, totalizers, printers, typewriters and recorders of all types.

Richardson's nationwide network of service facilities is at your disposal within 24 hours if required. Likewise, Richardson helps you at start-up of your system and thoroughly checks it in operation. For full details on how you can automate your processing with Richardson equipment, write or call today. 1791

Richardson Scales conform to U.S. Weights and Measures H-44 for your protection.

Here's the answer . . .

Richardson
MATERIALS HANDLING BY WEIGHT SINCE 1902

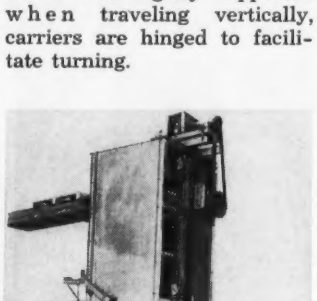
RICHARDSON SCALE COMPANY • CLIFTON, NEW JERSEY

Sales and Service Branches in Principal Cities • Also manufactured in Europe to U. S. Standards.

6435 on Reader Service Slip.

(*Continued from preceding page*)

package loading without danger of carrier tilt or deflection. While thus rigidly supported when traveling vertically, carriers are hinged to facilitate turning.



Equally spaced hinged doors allow for two or more discharge levels for packages leaving the unit

Floor-space requirements are four ft by four ft, plus 2 ft 3 in. by two ft for automatic belt feed.

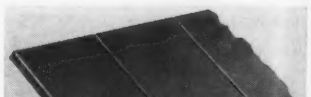
(Alvey index-type case vertical conveyor is manufactured by Alvey Conveyor Manufacturing Company, 9301 Olive St. Rd., St. Louis 32, Mo.)
6436 on Reader Service Slip.

Plastic top plates on steel chain cut handling losses

New flat top roller chain, combining top plates of Du-Pont's "Delrin" acetal resin with steel roller chain, reportedly eliminates stretch in chain of any length and virtually closes the gap (to within 1/32 in.) between plates.

Other advantages stem from unique properties of "Delrin," which weighs only 1/10 as much as metal, maintains a low coefficient of friction against extremes of heat, stress and moisture, is impervious to solvents and has bacteria resistance equal to stainless steel and rubber.

From these properties flow such benefits as less spilling,



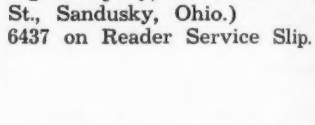
New chain's unique combination of materials eliminates "gap" between top plates

less container breakage, less down-time, less lubricant and minimum wear on plates, guides or runners and on lacquered cans.

(New Unisyn flat top roller chain is manufactured by The Union Chain and Manufacturing Company, 1955 Emmons St., Sandusky, Ohio.)
6437 on Reader Service Slip.

"Self-discharging trailer" controls feed to pneumatic lines

A self-discharging bulk carrier which controls feed to pneumatic lines may be mounted on truck, trailer or skids. Dry bulk material feed from the conveyor to pneumatic conveying lines is controlled as to volume and material-air ratio by low-pressure tank and pump combination. (See diagram)



Self-discharging bulk carrier is essentially a tank in structure. It is of lightweight construction, increasing the payload permissible within weight limitations

Material is introduced through one or more pressure-seal hatches in top of tank. It is moved within tank by one or more parallel Airslide conveyors toward the line through which it is to be discharged.

These conveyors, set in the

bottom of the tank, run in the direction of the long axis.

Air, supplied by a blower, enters into the lower chambers of the Airslide conveyors. This is the only source of air supplying the tank. The air filters up through permeable membranes that form the tops of the Airslide chambers and fluidizes material on membranes.

This reduces the angle of repose of material particles so that they flow, by force of gravity, down the 8- to 10-degree slope of the Airslide conveyors to the discharge opening.

Rate of discharge of material is controlled entirely within the tank by means of a special gate. In effect, this gate limits discharge rate of the Airslide conveyors to that of the external conveying system.

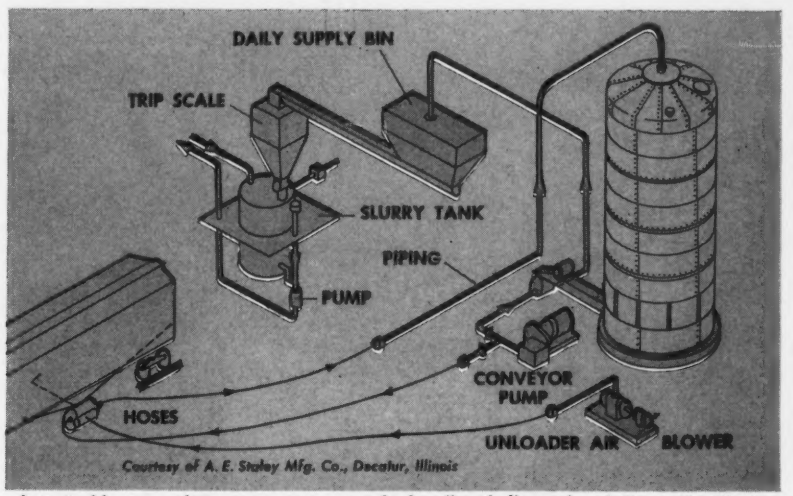
Since the pneumatic pressures are equal on both sides of the gate, there is no abrasive action on the gate nor any loss of pressure due to the gate's throttling action.

Control of the material discharge rate permits regulation of material-to-air ratios so that conveying can be accomplished at operating pressures below 15 psi which is below range regulated by pressure vessel codes.

("Airslide Pump — Self-discharging Trailer" is a development of Fuller Company, Catasauqua, Pa.)
6438 on Reader Service Slip.

"Higgins goes arty on us occassionally!"

Here's a "TRIPLE-THREAT" cost-saving system for handling bulk starches



Courtesy of A. E. Staley Mfg. Co., Decatur, Illinois

A typical low air-volume pneumatic system for handling bulk starch with *Permaglas* Mechanized Storage Units. Shipped in hopper cars, starch is unloaded by air-activated gravity conveyors, and delivered by air to storage bin, and then to a daily supply bin through a hose and piping connected to the conveyor blower. Screw conveyor carries starch from daily supply bin to automatic scales which supply a continuous slurry make-up tank.

Permaglas® *Storage Structures ...mechanical "sweep-arm" bottom unloader ...pneumatic or mechanical conveying systems*

Permaglas Mechanized Storage Structures offer a "dynamic challenge" to the higher cost, conventional methods used in handling and storing bulk starches—granular, grit, pearl, and powdered—the basic raw materials in paper, textiles, food processing, baking, confections and pharmaceutics. You can realize lower costs in your starch processing operations when *slow and expensive* methods are replaced with *Permaglas* Mechanized Storage Units, equipped with the *exclusive* "sweep-arm" bottom unloader, and an efficient pneumatic or mechanical conveying system.

The major advantages of an automatic bulk hanling system are:

- Bulk starch costs less than starch in paper or cloth bags.
- Labor costs are less. Save as much as 40 man-hours to unload a car of starch.
- Save warehouse space used for storage of bagged starch.
- Eliminate hidden dollar losses due to breakage, spillage, and residue left in bags.
- Prevent hazardous accidents with safer and cleaner plants.

What's more, you get this *exclusive* A. O. Smith feature. *Permaglas* Storage Structures are glass-fused-to-steel construction* both inside and out. They make possible sanitary, easy-to-clean, bulk starch handling systems. Eliminate corrosion. Safeguard starch from contamination. Reduce periodic structure maintenance to a minimum.

This low-cost automatic way to handle and store starches can be accomplished with minimum of capital investment. Certainly, it is worth further investigation. Mail coupon for details.

Through research ... a better way

A.O.Smith
CORPORATION
HARVESTORE PRODUCTS
KANKAKEE, ILLINOIS
A. O. Smith International S.A., Milwaukee 1, Wis.

*HYDRASTEEL— Protected by U.S. Patent No. 2,754,222

A. O. SMITH CORPORATION
Permaglas Storage Units, Dept. FP-20
Kankakee, Illinois
Send me free Permaglas Mechanized Storage Unit Bulletin MU-100.

Name.....
Title.....
Company.....
Address.....
City.....Zone....State.....

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"Now that we've leased this Hertz tractor and trailer, we even give door-to-door service on LTL orders!"

Ship on schedule! Lease Hertz long-haul equipment

NO INVESTMENT...NO UPKEEP

Tired of late pick-ups—late deliveries for less-than-truckload shipments? Switch to Hertz and get custom-engineered tractors and trailers. We'll supply new GMC, Chevrolet or other sturdy trucks or buy your present units, recondition them, and lease them back to you. Either way, Hertz takes over all repairs and maintenance.

Hertz reduces all your fleet accounting and upkeep problems to the writing of one budgetable check per week. You get out of the truck business and back into your own business. In addition to long term truck leasing, Hertz also *rents* extra trucks by the hour, day or week for your peak periods or any emergency. Rely on Hertz—America's No. 1 truck lessor—with more than 500 stations in the U. S. and Canada.

HERTZ TRUCK LEASE®

For more information, call your local Hertz office. Or write for the fact-filled booklet, "How to Get Out of the Truck Business," to Hertz Truck Lease, Dept. **N2**, *218 South Wabash Avenue, Chicago 4, Illinois.*

Plants, Companies, Personalities

Borden Foods Company

has opened a new flavor laboratory at its Syracuse, N. Y., Research and Development Centre. The laboratory will be used for chemical analyses in connection with improving flavors of existing Borden products and developing flavors for entirely new products. Dr. Frank M. Palermiti has left Bristol Laboratories, Inc., where he was head of instrumentation and physical measurements, to head the new flavor laboratory.

Theo. Hamm Brewing Company

St. Paul, Minn., has purchased the plant and other assets of Gunther Brewing Company, Baltimore. Hamm's has initiated a five-yr improvement and expansion program aimed at doubling the Baltimore plant's capacity.

Archer-Daniels Midland

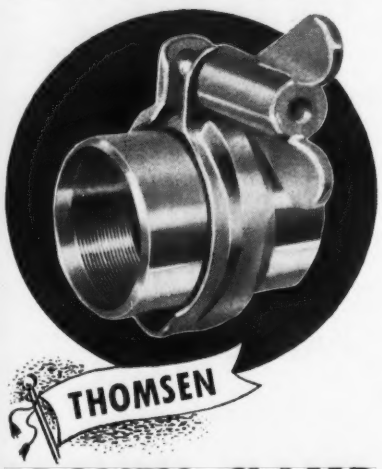
Minneapolis, has established a separate Prochem Division (protein chemurgy) to handle production and marketing of soy proteins and flours and industrial cereals. Headed by Robert S. Matthews, an assistant vice president, the new division is part of the company's Specialty Group, under direction of Richard G. Brierley, executive vice president.

Carnation Company

has promoted Dr. Wilbur S. Claus from group leader in chage of product development for the company's Albers cereals and Simple Simon frozen foods divisions to assistant research director of its research laboratories in Van Nuys, Calif.

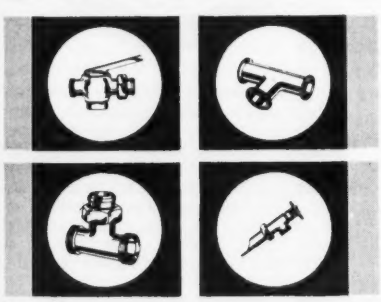
For more information on product at left, circle 6440 see information request blank opposite last page.

Take down and assemble in seconds with...

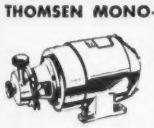


PROVEN CLAMP CONNECTIONS

Looking for a set-up on which to standardize? The answer is Thomsen stainless steel lines and fittings. Key to maximum efficiency for clamp-in-place or take-down lines is the new Thomsen vise action clamp which has more exclusive features than any clamp on the market. Go Thomsen all the way with pumps, tubing, fittings and valves. They will provide valuable engineering counsel on request.



THOMSEN MONO-MOUNT SANITARY PUMP



Here at last is the common sense sanitary pump design. The new Mono-Mount makes assembly and disassembly fast and easy. Stainless steel —no rust, no corrosion, easy cleaning.

FREE—New Thomsen clamp and fittings catalogs—write Department F

L. C. THOMSEN & SONS, INC.
KENOSHA, WIS.

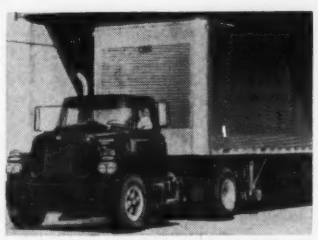
6441 on Reader Service Slip.

fp TRANSPORTATION

Compact highway diesels

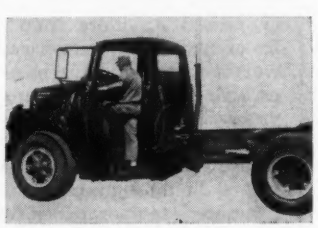
Available in both lightweight and standard models

New line of compact-design diesel-powered highway tractors features 90-in. bumper-to-back-of-cab dimension, can haul more than 800 lb additional payload over earlier models.



Model BC-225-D tractor is representative of new line of compact-design, diesel-powered highway haulers

Special lightweight version of new chassis, containing a wide range of aluminum components, can carry more than 1000 lb extra payload over previous standard models.



High-crowned roof gives more headroom and adds to cab rigidity

Offered in four- and six-wheel design, with gross combination weight ratings from 61,000 to 79,000 lb, tractors in the new line make possible total payloads ranging from the 38,000-lb level on up.

Other new and improved features contributing to increased accessibility, safety and driver comfort include

(*Continued on next page*)

a great name in lift trucks

HydroLectric

. . . this powerful electric tractor hauls one or more trailing units with speed, safety and ease of operation

Quiet and safe enough for hospitals — yet rugged enough for steel mills.

The one big difference in lift trucks is the exclusive

Dyna-Dual Power Unit

of the Hydrolectric

- Two Drive Wheels instead of one
- 12-18-24 Volt Operation
- Alloy Gear Transmission instead of chains
- 100% more Steering Ease—Greater Maneuverability
- 50% less Maintenance — Easy Accessibility
- Finger-Tip Control — Greater Safety

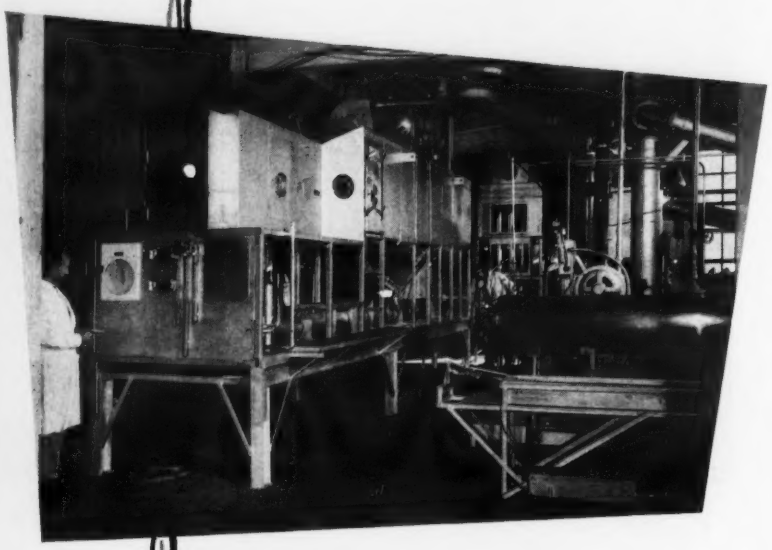
Hydrolectric moves more goods, quicker, easier and safer anywhere at less cost.

LIFT TRUCKS INC. W.W.W. STUEBING CINCINNATI

A TRUCK FOR EVERY PURPOSE AND MATERIAL

6442 on Reader Service Slip.

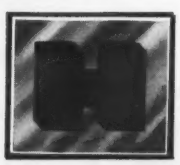
this Henszey Pilot Plant gives you a running start on your competition



Designed and built with *your* profits in mind, this newly-installed process pilot plant is ready and waiting to test and prove your processing ideas.

The scaled-down Henszey evaporating, drying and heating equipment has a capacity of up to 800 pounds per hour. It will handle dairy and food product experiments and test runs to *your* specifications.

These complete facilities, including the services of competent Henszey Engineers, are available dependent upon current test schedules. Write today for full particulars.



HENSZEY COMPANY
INCORPORATED
Dept. FP
WATERTOWN, WISCONSIN

ANOTHER HENSZEY PROCESSING *first*

6443 on Reader Service Slip.

transportation

(Continued from preceding page)

forward-mounted PT pump for underhood serviceability, relocated air compressor and aluminum steering gear and lift-out radiator core for easier removal.

Variable-rate rear springs provide a smoother ride and reduce weight; a wide-track front axle improves stability and turning radius; clutch has air-assist feature.

Cummins NH-180, NH-195 and NH-200 diesel engines are available, as is a wide range of transmissions, axles and wheelbases.

(BC-D line of compact-design diesel-powered highway tractors, available in standard and lightweight models, are manufactured by International Harvester Company, 180 N. Michigan Ave., Chicago 1, Illinois.)
6444 on Reader Service Slip.

Insulating truck bodies, trailers for real efficiency

Problem that has plagued truckers and truck manufacturers for years is increased weight and loss of insulation efficiency through air infiltration and moisture accumulation.

Recent survey of fleet owners revealed that after 60 days operation, average cargo trailer picked up more than 300 lb of water. In some cases, weight increases have been as as high as 4000-5000 lb in two yr of service.

Such efficiency losses increase heat gain to point where holding of proper refrigerated temperatures often is impossible.

Twelve-pg brochure deals with methods of eliminating air infiltration, use of air-barrier treatment and general considerations in insulating refrigerated bodies. Booklet also describes various types of material available for more efficient insulation.

("Insulations for Refrigerated Cargo Trailers and Truck Bodies," 12-pp, is available from Armstrong Cork Company, Lancaster, Pa.)
6445 on Reader Service Slip.

HOLZ Vulco-Lagged PULLEYS

GRIP BETTER TO KEEP TRACTION.. UP UP
DRIVE HARDER TO KEEP PRODUCTION.. UP UP UP UP
WEAR LONGER TO KEEP PROFITS.. UP UP UP UP

HOLZ Vulco-Lagged PULLEYS step up performance and eliminate seasonal maintenance to save you dollars and downtime! Tough, abrasion-resistant lagging of specially compounded rubber is permanently bonded to metal pulleys for positive, non-slip driving. Pulleys run longer without relagging*; belts run longer without renewing! Have lagging applied to **your** pulleys, or order **HOLZ Vulco-Lagged Pulleys** complete. Write for detailed information today.

*Up to 10 years operation reported on HOLZ Pulleys.

"IF IT'S RUBBER, WE CAN MAKE IT!"
SERVING INDUSTRY FOR A QUARTER CENTURY

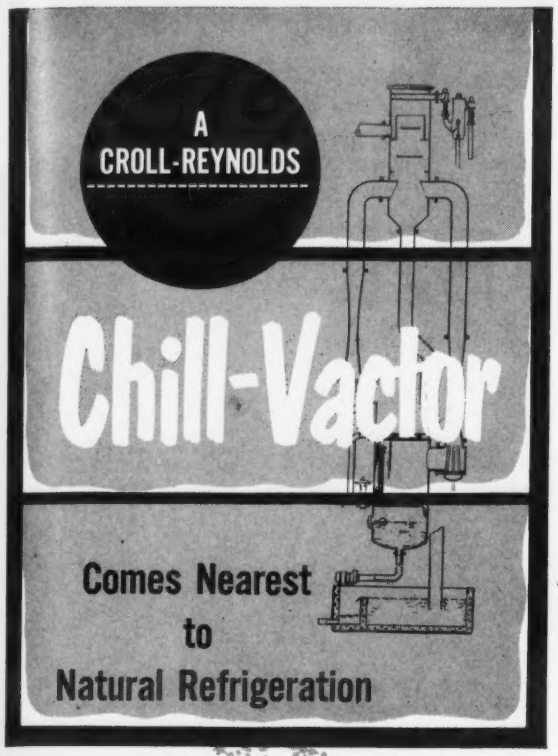
HOLZ
RUBBER COMPANY, INC.
1133 SOUTH SACRAMENTO STREET
LODI, CALIFORNIA
Dealer inquiries solicited.

6446 on Reader Service Slip.

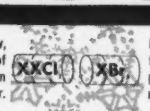
A CROLL-REYNOLDS

Chill-Vactor

Comes Nearest to Natural Refrigeration



Nature produces refrigeration (snow, sleet, and hail) indirectly by change of atmospheric pressure to bring warm water vapor in contact with cold air.



In each case, water is its own refrigerant or cold air serves the purpose. Jet vacuum refrigeration comes nearest to this natural refrigeration.

NO CHEMICAL REFRIGERANT OR ABSORBENT TO LEAK, CORRODE OR CRYSTALLIZE

As a method of industrial refrigeration, jet vacuum refrigeration is thoroughly established and is successful in many hundreds of industrial plants in capacities varying from a few tons to 4500 tons.

The unit sketched can be placed outdoors and operated continuously or intermittently in any climate. The equipment adapts itself readily to automatic control or is very easy to control manually. The unit is self-supporting. There are no moving parts, no noise, no vibration. The maintenance and supervision required are negligible.

While most vacuum installations are used to cool water, vacuum cooling is particularly efficient for cooling chemical solutions. Instead of the usual expensive heat transfer surface, only simple corrosion-resistant vessels are needed. Some process plants have dozens of separate units totaling thousands of tons of refrigeration just for the purpose of cooling chemical solutions. Their record of savings is remarkable.

There are many other applications, too. Fresh vegetables and other moist solids are readily cooled by jet vacuum refrigeration. By adding a heat exchanger bundle inside the vacuum chamber, gases can be cooled without circulating any liquid. In some cases, the automatic de-aerating effect of vacuum cooling is important.

Many installations of old style mechanical refrigeration could be replaced profitably with vacuum refrigeration, which costs much less to buy and somewhat less to operate.

Inquiries are given careful engineering study without obligation.

CROLL C R REYNOLDS

Croll-Reynolds CO., INC.

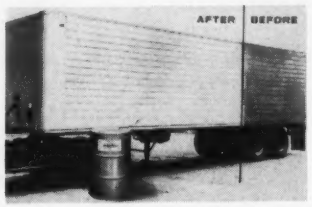
Main Office: 751 Central Avenue, Westfield, N. J.
New York Office: 17 John Street, N. Y. 38, N. Y.

Chill-VACTORS® • Steam-Jet EVACTORS® • Aqua-VACTORS® • Fume Scrubbers • Special Jet Apparatus

6447 on Reader Service Slip.

Brightens, cleans, protects in one spray application

New chemical, tested in over a yr of actual use by more than 30 fleets of all sizes, does double-duty job on aluminum and stainless steel vans and trailers of chemically *brightening* by removing oxidation and corrosion and *cleaning* by removing dirt, grease, oil and diesel smoke stains.



One man can do complete job on 35-ft trailer in less than 45 min

In addition, special chemical composition leaves a bright, dirt-free finish which also retards oxidation, and actually increases insulation value by increasing reflectivity of van's outer surface.

Application is made by mixing the chemical with from four to 30 parts of water, then simply spraying this solution on the surface, letting it stand for from two to five min and rinsing off with water.

("Dual Bright 35" cleaner and brightener is product of Ross and White Company, Chicago Daily News Bldg., Chicago 6, Illinois.)
6448 on Reader Service Slip.

Insulation efficiency of reefers evaluated

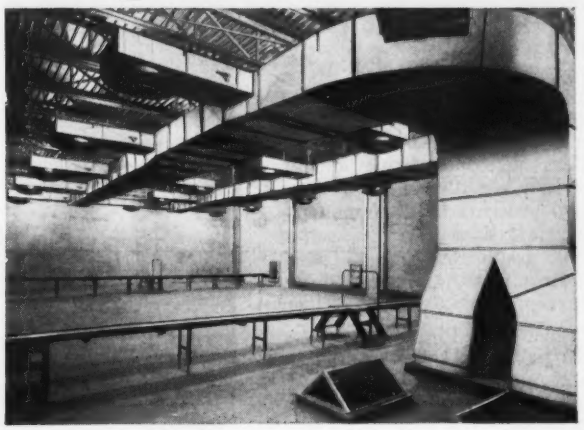
Seven refrigeration railroad cars which were tested are as follows: four 40-ft-long mechanically refrigerated cars, one 40-ft water-ice car and two 50-ft mechanically refrigerated cars.

Laboratory tests were made to assist in improving design of cars and to reduce deterioration and spoilage of perishable foods in transit.

Results of tests on cars

(*Continued on next page*)

King Engineering Report



How to design and locate Sharp Freeze Systems for THE YEARS AHEAD...

At the King Co. system engineering is a science because fifty years of experience has demonstrated that no two plants are exactly alike. King engineers design and locate each unit where it will:

1. not interfere with plant expansion
2. minimize infiltration
3. use least valuable floor space
4. not conflict with other plant operations
5. require lowest installation cost
6. maintain maximum product storage space
7. be readily accessible for maintenance without interruption of cold room operation.
8. provide most efficient combination of above features

Other important considerations are uniform air distribution, and air turbulence without blast effects on the box men.

King engineers are always ready to advise operators of freezer or storage plants on the best procedure for any particular problem. This service is provided at no extra cost to users of King Sharp Freeze Systems.

50 years of experience is at your service

SHARP FREEZE SYSTEMS

King COMPANY OF OWATONNA
911 Cedar St. OWATONNA, MINNESOTA

6449 on Reader Service Slip.

(*Continued from preceding page*)

showed wide variation of insulation efficiency. U-factors varied over 30 Btu between cars.

Procedure of testing, results and conclusions are fully described in 24-page report. Cars tested and method of testing are illustrated. Report also presents table summarizing test data, heat transmission graphs, calculations, and performance and pull-down curves.

(Marketing Research Report No. 365, USDA, Agricultural Marketing Service, Marketing Research Division, may be purchased for $0.15 from Superintendent of Documents, US Government Printing Office, Washington 25, D.C.)

Hi-speed chilling of trucks, RR cars

After carrier is loaded and doors closed, controlled charge of CO_2 liquid is sprayed into interior through special attachment. Pre-chilling and after-loading pull-down are thereby eliminated.

Four-page brochure discusses chilling method in detail and lists its advantages. Literature also explains availability of trial unit for plant-site testing.

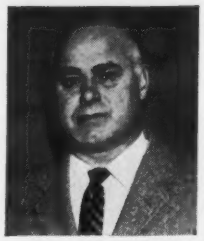
(Copy of brochure, "CO_2 Blast Chilling," may be obtained from Pure Carbonic Company, Division of Air Reduction Company, Inc., 150 E. 42 St., New York 17, N. Y.) 6450 on Reader Service Slip.

New car puller affords greater operator safety

Features: With new car puller, operator does not have to maintain tension or coil rope. Unit is totally enclosed, fully protecting operator from moving parts.

Description: Wire rope dead ends directly into the drum — thus there are no ropes to snub.

Heavy-duty clutch operated by a hand wheel permits



JOHN L. PETERSON
Executive Vice-President,
Federal Truck Lines, Inc.

A progressive and growing truck line, Federal Truck Lines, Inc., serves the States of Illinois, Indiana, Ohio and Kentucky, with headquarters in Chicago, and terminals in Indianapolis, Lawrenceburg, Cincinnati and Louisville. They operate 95 trucks with a large fleet of refrigerated trailers for hauling meat and frozen foods of all kinds. Here is what John Peterson has to say about their Fords.

HERE'S ANOTHER REASON WHY FORD TRUCKS ARE YOUR BEST BUY

"OUR FORD TILT CABS ALLOW 4000 LB.

"The shorter length and better weight distribution of Ford C-800 tractors enable us to haul 40-foot trailers and 4,000 lb. more payload legally.

"And the maneuverability and handling ease of these Ford Tilts make them ideal for our city runs in highly congested traffic . . . runs through Chicago, East Chicago, Hammond and Gary where tough start-and-stop driving really tortures trucks. *But how these Fords can take it!* Our shop files are full of typical durability records like this: '55 Ford F-800 tractor running this rugged route for 72,800 miles . . . and no major repairs at all.

"We started using Fords in 1942 and now have 74 in our fleet. They have always been economical to operate with good gas mileage and low maintenance costs. Ford tractor rear ends, transmissions and brake linings have proven to be exceptionally durable in our work. And Fords don't give us any kingpin or bushing problems. The ready availability and the low cost of replacement parts are other important reasons Fords are economical to run.

"We are just putting into service several new Ford C-800 tractors with Transmatic Drive and they look like the perfect job for our type of service."

ST BUY

LB.

e excep-
work.
us any
oblems.
nd the
t parts
easons
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ING

MORE PAYLOAD"

At Federal's dock, a mechanic stands on a special platform built on a Ford F-350 "Utility" Truck to check and start the trailer refrigerator unit. The Ford Tilt Cab tractor, at right, backs its trailer to the dock for unloading. Federal Truck Lines operates 74 Ford Trucks ranging from pickups to C-850 highway tractors

Big Fords for '60 are built for longer life . . . with Certified Durability

Whatever your job . . . wherever you do it . . . you'll discover just as Mr. Peterson did, that Ford Trucks are the best investment you can make for your transportation dollar.

Certified results of tests conducted by America's leading independent research organization (name available on request) confirm the fact that Ford Super Duties have been refined to make them more durable than ever before. Automatic radiator shutters, improved electric fuel pumps, and redesigned wiring harnesses are typical of the advancements to be found in these units.

Automatic radiator shutters reduced the coolant temperatures recorded in severe mountain road tests from a range of 79° to a 20° range. Engine operation between the temperatures of 167° and 187° means less expansion and contraction, more efficient combustion and better lubrication . . . all of which contribute to longer engine life.

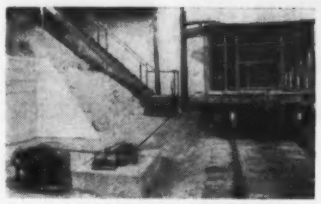
Dynamometer tests showed *no vapor lock* with Ford's submerged-type electric fuel pump at temperatures up to 200°. Incipient vapor lock with mechanical fuel pump resulted in a power loss of 9% under the same conditions. Shaker table tests plus constant exposure to oil, water and heat proved 1960 wiring harness to be *three times longer lived.*

Test results like these plus the experience of satisfied users are important, but that is not all. For 1960, the Super Duty line has been broadened to provide even more flexibility in power train options. Get the facts from your Ford Dealer!

FORD TRUCKS COST LESS

LESS TO OWN . . . LESS TO RUN . . . BUILT TO LAST LONGER, TOO!

6451 on Reader Service Slip.



Unit brings power of locomotive to one-man car-spotting jobs

drum to be released and turn freely in paying out rope. Clutch is easily engaged to start and pull a rated load.

A fluid coupling motor to sustain greater shock load is available as optional equipment. Unit is weather-tight, and requires no special housing.

(No. 14H Car Puller is manufactured by Stephens-Adamson Manufacturing Company, Ridgeway Ave., Aurora, Ill.) 6452 on Reader Service Slip.

Diesel pickup for city operations

New city pickup and delivery truck has 130-hp, six-cylinder diesel engine beneath power-tilt cab, permitting extra-short wheelbase of only 97½ in.

Truck's diesel engine was built especially for in-city operations

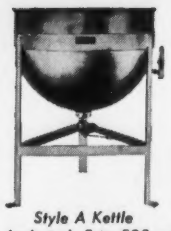
Result is economical, low-maintenance operation in congested areas requiring maximum maneuverability and driver efficiency, yet chassis has sufficient length for maximum body requirements of various pickup and delivery operations.

Engine operates in combi-

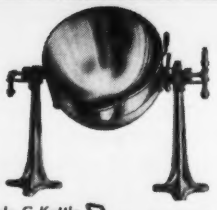
(*Continued on next page*)

LEE PRODUCTS
For Reduced Processing Costs

Style CW Kettle
⅔ Jacketed, 80 to 300 gal.



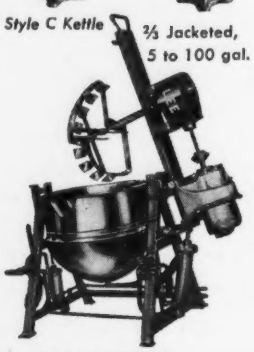
Style A Kettle
⅔ Jacketed, 5 to 500 gal.



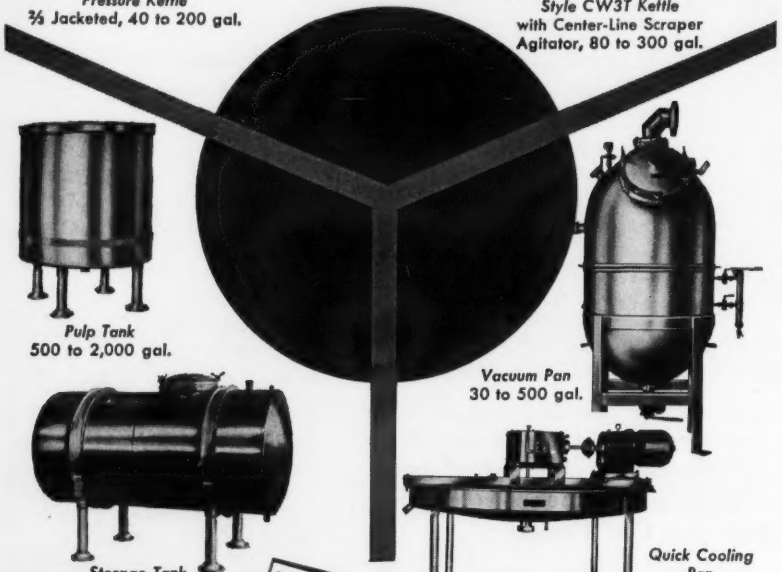
Style C Kettle
⅔ Jacketed, 5 to 100 gal.

Pressure Kettle
⅔ Jacketed, 40 to 200 gal.

Style B Kettle
Full Jacketed, 10 to 300 gal.



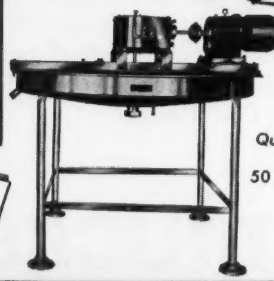
Style CW3T Kettle
with Center-Line Scraper Agitator, 80 to 300 gal.



Pulp Tank
500 to 2,000 gal.

Vacuum Pan
30 to 500 gal.

Storage Tank
100 to 5,000 gal.



Quick Cooling Pan
50 to 200 gal.

Write for bulletins on any of the products illustrated.

LEE
METAL PRODUCTS COMPANY, INC.
ALL LEE KETTLES ARE MADE TO A.S.M.E. CODE.

Kettles, Plain and Jacketed | Tanks, Processing and Storage | Agitators and Accessories | Vacuum and Pressure Equipment

414 PINE STREET, PHILIPSBURG, PA.

6453 on Reader Service Slip.

transportation

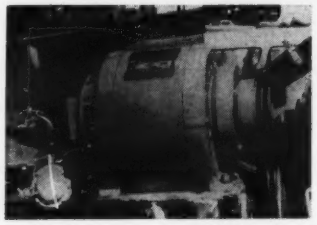
(*Continued from preceding page*)

nation with a synchronized five-speed transmission.

(White 3016D city pickup and delivery truck with diesel engine is manufactured by The White Motor Company, 842 E. 79th St., Cleveland 1, Ohio.)
6454 on Reader Service Slip.

5 kw, engine-mounted AC generator

Uses: For truck or tractor mounting where heavy-duty source of electric power is required.



Mounting kits are available for adapting generator to all popular makes of trucks

Features: Generator can handle induction-motor loads up through three hp. It may be driven directly by truck engine or from transmission via power take-off.

Control panel, supplied with generator, has field and clutch switch fuses, meter and engine throttle control.

Description: 5000 w, 220 v, 3 phase, 60 cycle generator has high-temperature winding for high under-hood operating temperatures.

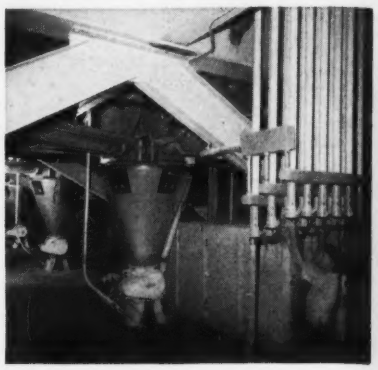
It is of vibration-proof, light-weight design.

(CDE-5000 GenerAc generator is a product of GenerAc Sales Inc., 124 S. Main St., Wales, Wis.)
6455 on Reader Service Slip.

A LOT OF HELP

There's a storehouse of information offered in technical literature. See the listing in this issue beginning on 115.

Problem:
To cut cost of conveying, storing and blending flour



Solution:
SPROUT-WALDRON PNEU-FLO® SYSTEM

With just one man on each shift, the C. F. Mueller Company unloads, blends and distributes 125,000,000 lbs. of flour a year at its six-story plant in Jersey City. Sprout-Waldron's bulk handling and Pneu-Flo positive pressure system recently installed has saved more than 25,000 square feet of floor space, reduced handling costs by $150,000 per year, freed more than $40,000 worth of equipment, simplified close check weighing of incoming raw materials, increased safety and reduced housekeeping and maintenance.

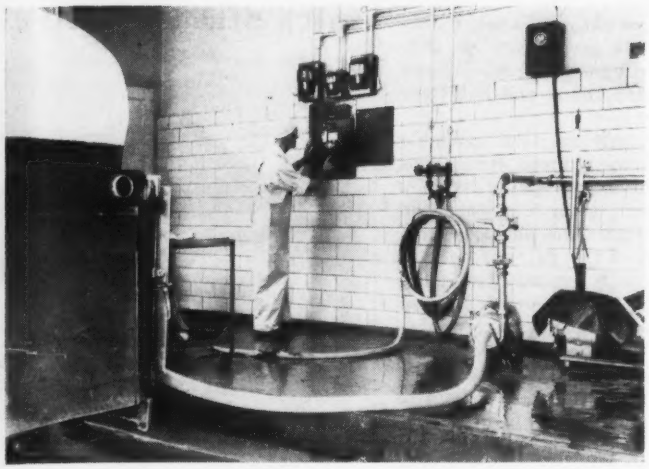
The system unloads and conveys to storage a minimum of one carload of flour in four hours; provides maximum diversity of storage; sizes all incoming material at a rate equal to or greater than the unloading rate; transfers the material at rates of 30,000 lbs. per hour.

The full story of this reliable pneumatic handling system is told in Bulletin I-57. Copies are available on request.

CW/105

SPROUT-WALDRON
Muncy, Pennsylvania
Size Reduction • Size Classification • Mixing
Bulk Materials Handling • Pelleting

6456 on Reader Service Slip.



Milk arrives at receiving station of Thompson's Honor Dairy. Hose draws milk from bulk truck (left) and pump (center) forces milk through pipeline to milk storage tanks on third floor. Milk is left in lines during the operating day. The first load is credited for the known amount in the lines which does not show up in the tank. At the end of the day, milk remaining in the lines is recovered by displacing it with water. Operator is shown reading continuous weight on indicator. Weight of full load is recorded and compared with age volumes on pick-up tickets brought in by bulk truck drivers

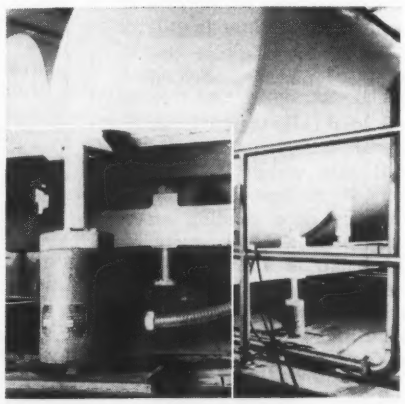
Electronic load cells . . .

Convert storage tank to automatic weight control system

Problem: When Thompson's Honor Dairy, Washington, D. C., converted to bulk milk pick-up, mechanical scales which had been used for weighing milk dumped from cars into a weigh tank could no longer be used efficiently

Therefore, the dairy was forced to accept all milk shipments on a volumetric basis. The volume measurements were those read and recorded from gages on farm bulk tanks.

(*Continued on next page*)



Milk is weighed by electronic load cells, the cylinders on which each supporting leg rests. Cells are completely sealed against moisture and corrosion and have no moving parts. Inset shows closeup of one of the four load cells supporting the storage tank. Electrical output of each is fed through cable at right to junction box where outputs are combined

Neptune "Meter with a Memory" never forgets the formula

Why waste a good man's time counting buckets, remembering formulas, waiting for liquids to creep up to gauge marks, repeatedly running the risk of counting or reading errors?

Let the precise "mechanical memory" of this Neptune repeating Auto-Stop meter do the work. Set the quantity required by the formula just once. Open the valve. The meter does the rest... shuts off automatically at the exact amount. Even prints a batch ticket if you want. The meter "remembers"...delivers the same amount each time the valve is opened until reset for a different quantity.

A meter helps a good operator produce more, with consistently better quality, less back-breaking work, and better housekeeping. Investigate this cost-saving meter today. Our field engineers will be glad to help.

GET THE FACTS
Ask for helpful Meter Data Bulletin 566 YFP. See Neptune Data Pages in Chemical Engineering Catalog.

neptune

NEPTUNE METER COMPANY
19 West 50th Street • New York 20, N.Y.

Branches in:
ATLANTA • BOSTON
CHICAGO • DALLAS • DENVER
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PHILADELPHIA • PORTLAND, ORE.
SAN FRANCISCO (Millbrae)
IN CANADA: TORONTO 14, ONT.

6457 on Reader Service Slip.

Don't Sell Your Grade A Products at Grade B Prices!

Accurate testing can make the difference between Grade A and Grade B profits. Make sure you're grading *UP* with the Bausch & Lomb Abbe-3L Refractometer.

With the Abbe-3L, you're *sure* you're meeting purity and concentration specifications. It's industry's grading standard.

YOU KNOW YOU'RE RIGHT. Large, bright scale reads refractive index to .0005; estimates to .0001. Reads dissolved solids to .2%; estimates to .1%.

JUST LOAD—LIGHT—LOOK. You test *fast* with the Abbe-3L (easily 4 tests a minute) because everything you need is right up front. If your process calls for more than 240 tests per hour, just add another instrument for each 240 t.p.h.

LOWEST COST ABBE. ONLY $745. And figuring on a conservative ten years of high quality service, your *up*grading costs you just 29 cents a day.

WRITE for Abbe Catalog D-280 and free demonstration. No obligation, of course. Bausch & Lomb Optical Co., 60602 Bausch St., Rochester 2, N. Y.

BAUSCH & LOMB

6458 on Reader Service Slip.

(*Continued from preceding page*)

A spot check of these measurements from time to time showed errors as high as three to three and one-half per cent.

The only solution available to overcome these errors was a complete weighing system. However, such a system had to fit within the physical limitations of the dairy.

The milk storage tanks are located on the third floor of the building to make maximum use of gravity flow. This location made it impossible to provide a pit beneath them to accommodate a weighing system. Since the ceiling clearance above the tanks was a scant three feet, the tanks could not be raised enough to provide very much space on the floor beneath to accommodate a weighing system.

In addition, the receiving room was located a considerable distance from the storage tanks, being on the first floor at the other end of the block-long building. While there was no problem in pumping the milk from one point to the other, measurement of quantities of milk pumped had to be available continuously and instantaneously at the receiving station.

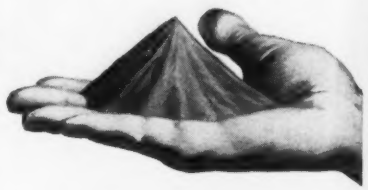
The Department of Weights, Measures and Markets of the District of Columbia stipulated that any system should be accurate to ± 0.05 per cent over the whole range of the scale when initially installed, and should sustain an accuracy of ± 0.10 per cent.

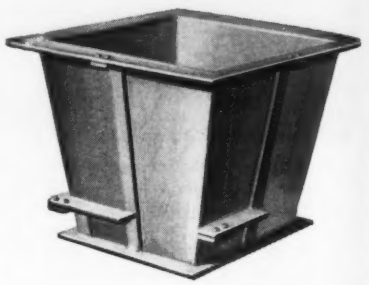
Solution: The system selected to fit in with these numerous requirements has as its vital component an electronic load cell. Four of these load cells, only a few inches high, are mounted under the legs of the tank as described below.

These load cells weigh loads as large as 50,000 pounds and transmit this weight or any fraction of it instantly and continuously as a reading on an instrument a block away.

A load cell is a short column of steel to which are bonded wire strain gages — fine wire filaments — that are firmly fixed to the column.

For accurate reproduction of bulk material formulations—W-C BATCH-WEIGHING SYSTEMS





In any batching operation—from simple dump-and-fill weighing to multi-ingredient ratioing — W-C Batch-Weighing Systems provide the reliably accurate net-weight control essential to consistent product uniformity.

Chief reason for this is the W-C Pneumatic Weight Transmitter. A rugged yet sensitive force-balance unit, it is capable of an accuracy of $\pm 0.25\%$ calibrated weight range, with reproducibility better than 1 part in 2000.

Each W-C Batch-Weighing System is designed to job specifications, using pre-engineered, unitized components of *known* performance capabilities. Consequently, you are spared the uncertainties—and costs—of "prototype" engineering . . . yet you realize the very tangible benefits of an application-engineered system built to your requirements.

Typical applications include: Batching flour, coffee beans, corn, oils for formulating or processing purposes.

Write for new Bulletin 14

W-C WEIGHING & CONTROL COMPONENTS, INC.
Div. of CompuDyne Corp.
E. County Line Road • Hatboro 13, Pa.
S.A. 2123

6459 on Reader Service Slip.

Any changes in the weight on the steel column, however slight, changes the compressive forces on the column and causes a distortion of the strain gage. Distortion of the strain gage, in turn, changes its electrical resistance.

This change is measured electrically and transmitted to an instrument calibrated to read the change in terms of weight.

The milk storage tank at Thompson's Honor Dairy is a standard horizontal one built by Chicago Stainless Equipment Corporation. To convert this tank to fit in with the automatic weight control system, the tank was lifted and two feet were cut from each of eight legs. Legs were then socketed into two steel beams, one running along each side of the tank.

Beneath each end of each beam, a 20,000 pound electronic load cell was installed. Leads from the cells were gathered at a junction box mounted on one side of the beams, and the combined output was fed into a precision indicator located in the receiving station a block away.

Accuracy

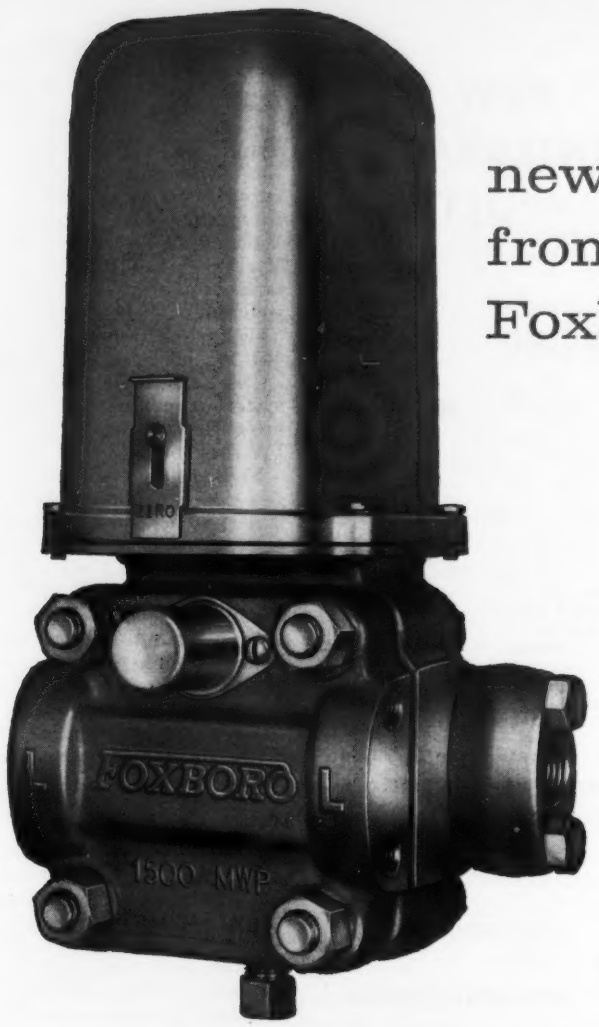
The sytem is calibrated for five weight ranges: 0 to 10,000, 10,000 to 20,000, 20,000 to 30,000, 30,000 to 40,000 and 40,000 to 50,000 pounds. Range is automatically changed whenever weight reaches the limit of the range being used.

The accuracy of the over-all weighing system is $\pm 1/20\%$ of the net load over the entire range. Since the indicator dial is graduated in 20 pound increments, which can be accurately read to within 10 pounds, the readability is $\pm 1/20\%$ down to 20,000 pounds, and within ± 5 pounds from 20,000 pounds down to zero.

The indicator being used to show the weight in only one tank, is equipped with a three-way switch so that it can accommodate weighing systems under two additional tanks when the dairy is ready to equip these tanks.

Initial cost of the system, including steel beams, plates,

(*Continued on next page*)



new
from
Foxboro

ABSOLUTE PRESSURE d/p CELL TRANSMITTER with full-power 3-15 psi signal

Now there's a Foxboro d/p Cell designed specifically for low pressure measurement and transmission. It's the new Type 13AA Absolute Pressure Transmitter.

One side of the 13AA is evacuated, providing an absolute zero reference for the measurement of any process pressure. The 3-15 psi output signal has ample power for direct operation of standard receiver recorders and controllers.

All parts of the 13AA exposed to process fluids are constructed of Type 316 S.S. The sensing element — a silicone-filled twin-diaphragm capsule with solid stainless core — provides overrange protection to 1500 psi.

The 13AA Absolute Pressure Transmitter is ideal for vacuum pans, evaporators, or any other process vessel operating under a vacuum. Ask your Foxboro Field Engineer for detailed information, or write for Bulletin 458-22A. **The Foxboro Company, 922 Neponset Ave., Foxboro, Mass.**

Specifications:

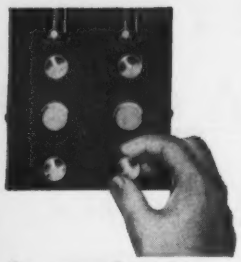
Range Spans: Adjustable 100 to 450 and 400 to 1500 mm of mercury

Output: 3-15 psi or 0.2 — 1.0 kg/cm^2

Accuracy: 0.5 percent of full scale span on most ranges

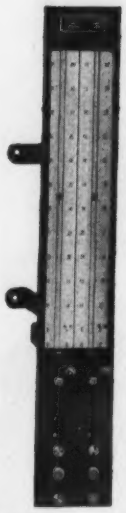
FOXBORO
REG. U.S. PAT. OFF.
process instrumentation

6460 on Reader Service Slip.



NEW INTEGRAL SIMPLICITY

in continuous, remote TANK GAUGING



Simple in principle and practice . . . the new Meriam Continuous-Purge Tank Gauge. Integral easy-reading purge-flow indicator and convenient front-panel operating knobs make operation simple, foolproof.

Based upon manometric principles, the Gauge has the accuracy and dependability inherent in the manometer. No calibration troubles, no mechanical difficulties. Indication is direct, dependable and continuous.

Rugged enough for outdoor use, the Gauge can also be panel mounted anywhere up to 600 feet from the tank. It is available in single- and multiple-tube models in ranges up to 60 inches, with a choice of indicating fluids to permit selection for sensitivity and readable accuracy required.

WRITE FOR BULLETIN L-10

The MERIAM Instrument Company

10920 Madison Avenue, Cleveland 2, Ohio S.A. 1952

6461 on Reader Service Slip.

ELECTRONICS-TIME *Lumenite* AUTOMATIC CONTROLS

- *ELECTRONIC LIQUID LEVEL*
- *INDUSTRIAL TIMERS*
- *TIME SWITCHES*
- *MAGNETIC SWITCHES*
- *ELECTRONIC SWITCHES*

Your business is of first importance, therefore, all LUMENITE manufacturing and engineering are devoted to the sole production of Controls. In the following list of Bulletins there is a Control best suited to your operation in a money making and saving way.

For complete information and prices check ☑ the Bulletins you want. We'll send them without obligation. Tear out the ad and use it for your requests.

The Bulletins are technically informative; with load capacities, installation diagrams, etc.

☐ TIME SWITCHES
☐ PROGRAM CLOCKS
☐ CYCLE REPEATERS
☐ TIME DELAY RELAY
☐ AUTO-LAWN SPRINKLERS
☐ LIQUID LEVEL
☐ MILK LEVEL
☐ NONCONDUCTIVE LIQUID
☐ AUTOMATIC RESET
☐ ICE THICKNESS
☐ BOILER LEVEL
☐ MOTORIZED SANITARY VALVES
☐ INTERVAL TIMERS
☐ PHOTO-ELECTRONIC RELAYS-COUNTERS, ETC.

All LUMENITE products have a responsible guarantee

LUMENITE ELECTRONIC CO.
ENGINEERS • DESIGNERS • MANUFACTURERS
407 South Dearborn Street Chicago 5, Illinois

6462 on Reader Service Slip.

(*Continued from preceding page*)

installation of load cells, etc., was about $6,000 for the first tank. Each new system, to equip the two additional tanks, will cost about $2500. Therefore, the cost of three tanks, equipped for electronic weighing, will be about $11,000 as compared to a cost of $18,000 for mechanical systems.

The electronic weighing system eliminates all of the inaccuracies in measuring milk by volume.

This includes the errors in flowmeters when foam is measured as milk, the errors in volume gages when bulk tanks settle and go out of level, the dip-stick and volume gage errors in dairies arising from the inaccuracies of human observations.

Now that the dairy can maintain a constant check of volume gage accuracy on bulk tanks of milk producers, it is easy to know just which producer's tanks need to be recalibrated.

Each bulk truck brings in milk from a known number of milk producers (seven or eight) and also a record of the total volume of milk that the farmers bulk tank gage shows as being delivered.

When the milk in each bulk truck is pumped into the storage tank, it is weighed. When the recorded weight is multiplied by an average specific gravity, the result should equal the aggregate volume reported from the gages of all the bulk tanks that contributed to the truck load.

If the result doesn't equal the aggregate volume, somebody's gage is wrong, or the tank truck operator has read a gage incorrectly.

But the erroneous gage or reading has occurred at one milk producer out of only seven or eight suppliers. And checking 7 or 8 bulk tanks is easier than checking the tanks of every producer.

(Electronic Weighing system installed at Thompson's Honor Dairy is a product of Baldwin-Lima-Hamilton Corporation, Electronics & Instrumentation Division, 42 Fourth St., Waltham, Mass.)

6463 on Reader Service Slip.

to help make YOUR brand the one they like best
check up on
SPRAY NOZZLES
To improve product quality and lower spraying costs, Spraying Systems offers the advantages of advanced design and better performance. Typical applications include mixing, washing, cooling and spray drying. We also offer spray nozzles to meet unusual conditions such as high abrasion or extremely fine atomization.
SPRAYING SYSTEMS CO.
3213 Randolph St. • Bellwood, Ill.
WRITE FOR CATALOG 24 forty-eight pages of complete data on thousands of types and capacities.
ADVANCED SPRAY NOZZLE DESIGN FOR NEW DIMENSIONS IN CONTROL AND PERFORMANCE

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need more information . . .

Note there is a key number at the end of editorial articles or advertisements. To request more information circle the proper number on the convenient form opposite the last page. Send the form to us . . . we do the rest. Information comes direct to you. No obligation, of course.

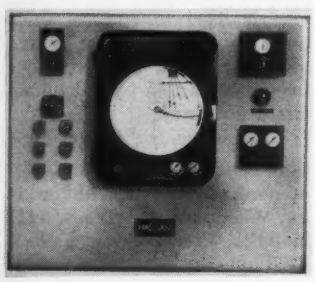
Automatically controls moisture loss in smokehouse products

A control system has been developed which automatically measures, records and controls moisture loss in smokehouse products. System thus eliminates the uncertainties heretofore created by temperature and humidity changes and variations in product.

With the system, it is possible to reach desired shrink in smokehouse products at the same time desired internal temperature is achieved, thereby improving the operation, productivity and quality.

Furthermore, system provides great accuracy in maintaining moisture-protein balance in sausage, prevents over-shrinkage with bologna and, in general, upgrades appearance and sliceability characteristics of hams.

Same desired results can be achieved day after day in production.



Central control panel is mounted outside the smokehouse. This control panel makes all operational data, including internal product temperatures, immediately available to the operator

System combines a pneumatic balance with a pressure recorder and an electronic temperature indicator to provide a continuous reading of all variables on a single chart during smoking of sausage, bacon and hams.

All operational data, including internal product temperatures, are immediately available to the operator at a central control panel mounted outside the smokehouse.

Once the desired percent-

(*Continued on next page*)

New Taylor
LIN-E-AIRE*
Valve Actuator

Ideal for handling steam and water services throughout the food processing industries

The LIN-E-AIRE Valve Actuator is designed to give:

1. **Greater power—size for size.**
2. **Constant diaphragm area for improved control.**
3. **Precision alignment for friction-free stroking.**

Check these features:

Rugged cast-iron corrosion-resistant yoke.

Great strength of drawn steel diaphragm case permits high pressure operation when needed. (100 or 50 psig, depending upon size.)

Long stroke with constant areas, due to deep-convolution-diaphragm, shaped drive plate and long spring.

Long life and low hysteresis because of nylon-reinforced Buna-N diaphragm with rolling action.

Easiest spring adjustment due to thrust-ball-bearing.

Positive alignment assured by precision machining and self-centering diaphragm.

Taylor Hi-Flow* Valves Save You Money

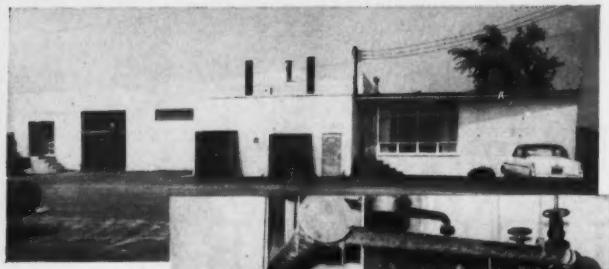
You can use a smaller size valve when you use Taylor Hi-Flow Maximum Capacity Valves because they have greater flow capacity than conventional valves of the same size. Net flow area of the valve is equal to *90% of the same size standard pipe.* Its simple design keeps maintenance to a minimum, and its rugged construction assures you a long service life. Sizes ½ inch through 2 inches.

See your Taylor Field Engineer or write for **Bulletin 98316.** Taylor Instrument Companies, Rochester 1, New York, or Toronto, Ontario.

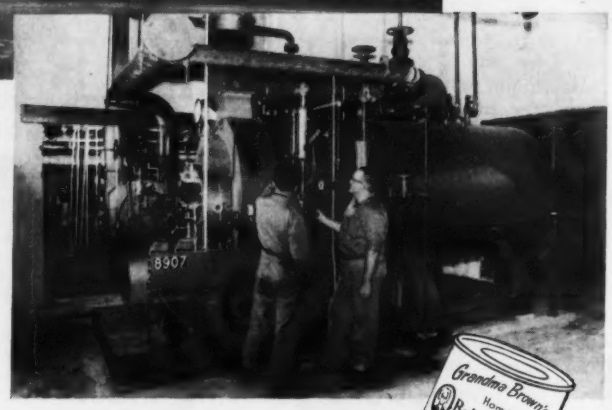
*Trade-Mark

Taylor Instruments **MEAN ACCURACY FIRST**

6465 on Reader Service Slip.



Although Grandma Brown began operations in 1937 on a kitchen stove, BWB Foods, Inc., now operates this modern plant at Mexico, N. Y.



BWB Foods maintenance man checking 150 hp Cyclotherm. Cyclotherm's automatic operation eliminates engineer-operators, cuts maintenance costs by up to 50%.

BWB FOODS, INC.,

gets the

CYCLOTHERM *Boiler Habit*

BWB Foods, Inc., producers of Grandma Brown's Baked Beans got its first Cyclotherm boiler (60 hp) in 1947. In 1947, along came Cyclotherm No. 2 (80 hp). Last year, BWB more than doubled its Cyclotherm capacity with a 150 hp unit. That's repeat sales!

Modulation Important

BWB particularly appreciates Cyclotherm's modulation control. This feature permits the equipment to operate at from 30% to 100% of capacity without loss of efficiency. And the modulation control on the Cyclotherms aids in quality control of the beans.

Under One Roof

Cyclotherm boilers are built under one roof, with one manufacturing responsibility behind the entire equipment. They are fire-tested by Cyclotherm and shipped ready to operate. Because of their advanced design, Cyclotherms are up to ⅓ smaller than other package boilers of equal capacity—can be accommodated in limited boiler-room space.

Complete Line

Cyclotherm produces a complete line of steam boilers, with 18 models ranging from 15 to 750 HP. Cyclotherm hot water boilers, 10 models, are rated at from 670,000 to 6,700,000 BTU. Cyclotherms meet all state requirements, conform to A. S. M. E. and National Board Standards, carry Underwriters' Laboratories label.

YEARS AHEAD IN STEAM & HOT WATER GENERATION
CYCLOTHERM®
STEAM AND HOT WATER GENERATORS

A Division of
National - U. S. Radiator Corp.,
61 E. First St., Oswego, N. Y.

Clip to your letterhead:

Please send me full information on Cyclotherm Steam and Hot Water Boilers.

61

6466 on Reader Service Slip.

(*Continued from preceding page*)

age weight loss is set at the control panel, operation is completely automatic. When desired weight loss is reached, the system actuates a solenoid which, in turn, closes the damper so that smokehouse humidity will rise to 100 per cent, thus stopping further weight loss.

Also, at the same time, a visual-audio alarm alerts the smokehouse operator who then checks the temperature indicator. If desired internal product temperatures have been reached, he then removes the product from the house.

Through the use of four temperature probes inserted in the products, the operator is able to measure temperature variations at different locations throughout the smokehouse simultaneously. These probes are platinum resistance bulbs, one-eighth inch in diameter and are connected by leads to the temperature indicator.

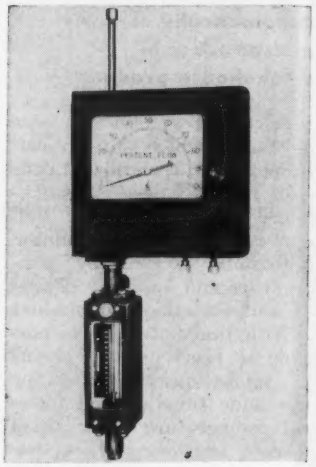
(Control system that automatically measures, records and controls moisture loss in smokehouse products is a development of Hagan Chemicals & Controls, Inc., Division of Calgon Company, Hagan Building, Box 1346, Pittsburgh 30, Pa.)
6467 on Reader Service Slip.

Pneumatic transmitter for glass- or metal-tube rotameters

A pneumatic transmitting rotameter signals fluid rates of flow to remote-located recorders and controllers. Transmitter is suitable for use on either glass- or metal-tube rotameters.

Instrument can be easily calibrated. Four calibration adjustments permit accurate field recalibration whenever basic operating conditions change. No cams are used in these adjustments.

A magnet design (see photo) provides an evenly-distributed magnetic field without drag on the metering float.



Metering float of rotameter has an extension rod which extends into transmitter case. As magnet in extension rod moves up or down with float, movement is followed by "follower" magnets encased in arm of transmitter. Magnet arm operates a ball pilot in transmitter unit. This ball controls air pressure for accurate transmission of rates of flow

Percent scale on transmitter case is suitable for any calibration. A factor tag on dial face is used to convert scale units to flow quantity. Varying supply air pressure, between 20 and 25 psig does not affect accuracy.

(Pneumatic Transmitting Rotameter, Model 58, is a development of Schutte and Koerting Company, Cornwells Heights, Bucks County, Pa.)
6468 on Reader Service Slip.

Detects and measures without physical contact

Electronic sensing control, described in 2-page bulletin, recognizes metallic and nonmetallic objects without physical contact as they enter a capacity field.

Not only does the unit recognize errors or deviations from the constant, as objects enter the field, but it indicates whether the sensed objects are too large or too small, too far or too near to a predetermined position or setting.

Detection is expressed in numerous ways, such as stopping a machine, actuating a rejecting or correcting device

(via plus-minus relays) or signaling for action by an attendant.

Control has numerous applications. Included are detecting variations in flow of material in a chute; revealing changes in moisture content of grain, flour, feeds, cereal etc; indicating changes in liquids flowing through pipeline; testing for presence of foreign substances in fluids; counting products in closed cartons; sensing missing caps on filled bottles prior to packaging; and controlling position of cans on conveyor prior to filling operations.

Control consists of a sensing element or probe, connected to a coaxial cable to give the electronic control. The device can be set up to any given constant at a given time interval.

The control is available in chassis form for panel mounting, or in a key-locked, shock-mounted and gasketed cabinet.

(Electronic sensing control, Bul 400, is available from Security Controls, Inc., 503 Franklin St., Buffalo 2, N. Y.) 6469 on Reader Service Slip.

No lubrication needed for unit-bearing electric motor

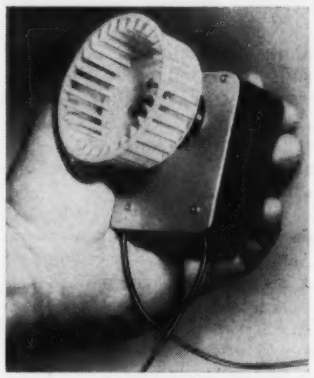
Keeps ice from collecting in freezers

A sealed-in-lubrication, unit-bearing, fractional horsepower, electric motor has been developed for use in freezers to keep ice from accumulating.

Motor, which requires no lubrication, also has application for driving exhaust fans, operating liquid circulating pumps in machines and cooling larger electric motors.

Lubricating oil is sealed inside the turning-rotor when motor is built. This patented feature cuts down oil oxidation to a minimum and eliminates need for future oiling.

Manufacturer guarantees the motor to run five years without oiling. Motor has two-pole winding and can be wound for 110 or 220 50/60 cycle voltage. The unit-bearing rotor turns on a stationary shaft at 3400 rpm without a load, 2600 to 3200 rpm with recommended loads, horsepower rating 1/750 to 1/185.



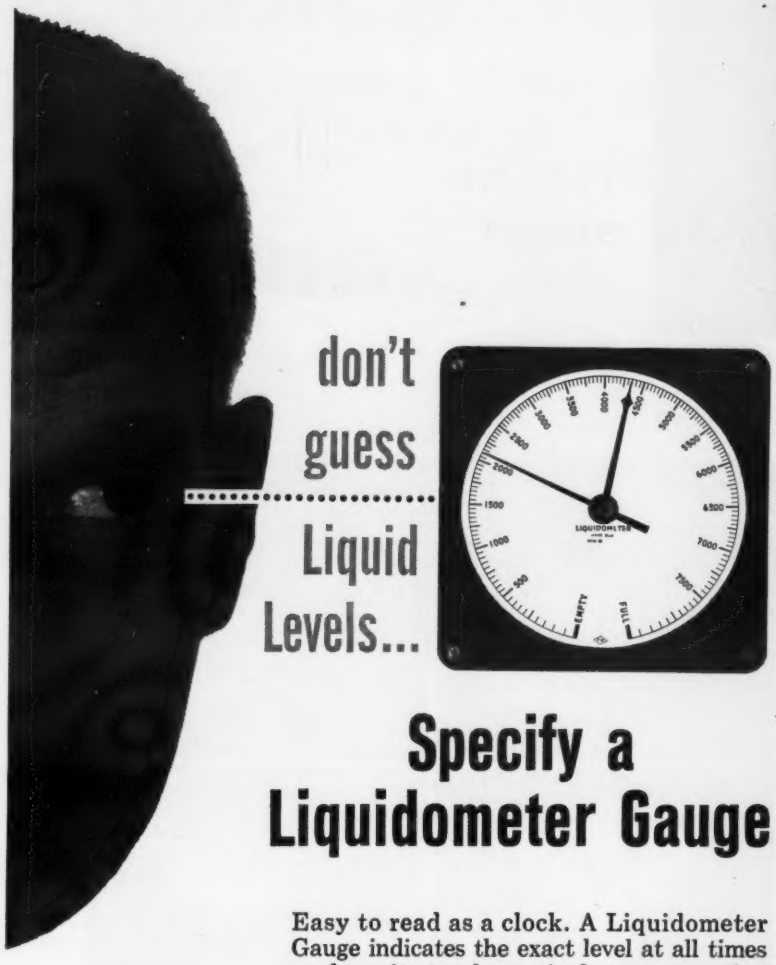
View of sealed bearing motor in a trim housing fitted with a 2½" nylon blower, the type used to circulate air in a freezer. Unit is also available as a skeleton motor

It is built to operate in a wide range of temperatures from −10 to +250 F. It is ready to be or fitted with circulating blowers two to three inches in diameter, or four to six inch plastic fans or with gear boxes.

(Sealed-in-lubrication, unit-bearing, electric motor, Model S/L-1085, is manufactured by Howard Industries, Inc., 1760 State St., Racine, Wis.) 6470 on Reader Service Slip.

VOTE FOR YOUR FAVORITE CARTOON

See this month's "FP Hall of Fame Cartoon" on page 117, and then vote for large reproduction of your favorite on the Reader Service Slip.



Specify a Liquidometer Gauge

Easy to read as a clock. A Liquidometer Gauge indicates the exact level at all times ... shows it at a glance. And gauge operation is completely automatic—as far as 250 feet from the tank—without need for auxiliary power of any kind.

A Liquidometer Tank Gauge measures virtually any liquid. It's simple to install—requires no maintenance. Many have provided over 30 years of efficient, dependable service. All are approved by Underwriters' Laboratories and Factory Mutual.

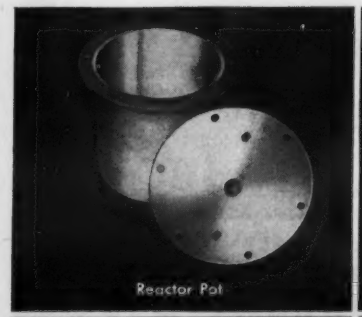
Whether your gauging needs require an automatic Liquidometer Gauge, a hydrostatic Levelometer or a tank-site-indicating Direct Reader, you'll get the best by specifying Liquidometer. For complete details write Dept. G.

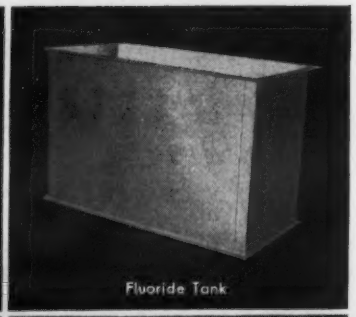
Since 1920 ...of proven quality

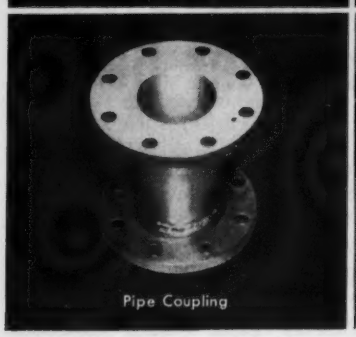
THE LIQUIDOMETER CORP.
LONG ISLAND CITY 1, NEW YORK

6471 on Reader Service Slip.

TEFLON* SHEET TANK LININGS







OFFER POSITIVE CHEMICAL PROTECTION

Now commercially available, Tank Linings of Teflon offer the ideal solution to your equipment lining problems. The toughest material yet produced, Teflon gives positive protection against the harshest corrosives.

Hydrochloric, hydrofluoric, and nitric acids, plus the stronger alkalies, oxidants, and solvents cannot harm Teflon Linings. They're easy to clean, non-brittle, non-contaminating, non-flammable, and can be used in **extreme temperatures.**

Anti-stick service. For applications where extremely low coefficient of friction is indicated, Teflon Linings can be cemented with excellent bond strength. Typical uses range all the way from frictionless liners for ducts, hoppers and tanks to the facing of aircraft skis; from easy to clean, bacteria-free, non-contaminating work surfaces in food and pharmaceutical plants to frictionless facings for valves and machine parts; from guide-rails on industry's countless packaging machines and conveyors, to paper dryer rolls; on candy molds.

Applied widely by carefully selected and authorized applicators. The experience and "know-how" of these tank lining experts guarantee satisfactory Teflon Lining installation, prevent expensive failure due to improper application. Approved applicators include:

The Barber-Webb Company, Inc.,
Los Angeles, Calif.

Belke Mfg. Co., Inc.,
Chicago, Illinois

Buckley Iron Works,
Dorchester, Mass.

Electro-Chemical Engr. & Mfg. Co.,
Emmaus, Pa.

Linco, Inc.,
Houston, Texas

Mercer Rubber Corp.,
Little Ferry, N. J.

Metalweld, Inc.,
Philadelphia, Pa.

GARLOCK

You can also obtain details on Teflon Linings by writing to Special Products Dept., The Garlock Packing Company, Camden 1, New Jersey.

*DuPont Trademark for TFE Fluorocarbon Resin

6472 on Reader Service Slip.

instrumentation

Pocket-size handbook on hydrostatic instrumentation

Pocket-size, 88-page handbook on hydrostatic instrumentation has been prepared for the convenience of engineers and other personnel responsible for the specification, purchase, installation or operation of instruments.

Information on the principles of hydrostatic measurement, selection and installation of instruments, design and construction of panel systems, as well as useful engineering data and diagrams has been assembled in a single, handy reference manual.

Twenty-six pages of engineering data are included in the handbook, providing information on tank volume formulae, conversion tables, viscosity charts, hydrometer scales, specific gravity tables for various liquids and other pertinent data.

("Handbook on Hydrostatic Instrumentation" is available from Petrometer Corporation, 43-22 Tenth St., Long Island City 1, New York.)
6473 on Reader Service Slip.

Instruments to measure, record, test

A full range of instruments for measuring, recording and testing are listed in 48-page catalog.

A brief description, typical illustration, salient specifications and reference for additional information are given for each family of instruments.

Included in the catalog are DC amplifiers, data handling systems, lab and calibration instruments, magnetic tape instrumentation, nuclear instrumentation, oscillographs, recorders and indicators, temperature controllers and transducers.

("Scientific and Test Instruments", Cat G-10, is available from Minneapolis-Honeywell Regulator Company, Station M-321, Wayne and Windrim Avenues, Philadelphia 44, Pennsylvania.)
6474 on Reader Service Slip.

Insert placed about one inch from bottom of box, holds six bottled samples of Royal Crown Cola being shipped to central testing labs. An identical insert will be placed over the bottles to brace them firmly in place during shipment. Samples of sugar are bagged and sent to testing lab along with bottles

Upon arrival at testing lab, top insert is removed and bottles are unpacked for testing

Royal Crown Cola . . .

Safely ships bottled samples to lab in corrugated boxes

- **Eliminates almost the yearly salary of one man's labor**
- **Cuts container cost by nearly two-thirds**
- **Reduces shipping costs**

Boxes used by Royal Crown Cola Co., Columbus, Ga., to ship test samples each month to a central testing laboratory from their 460 domestic and foreign bottling plants proved to be extremely unsatisfactory.

Each box contained pads and 18 board inserts to hold glass sample bottles firmly in place. Even with these precautions, however, there was considerable breakage in shipment because inserts were not tailored to the size of the bottles. Wads of wastepaper, stuffed around the bottles to keep them from smashing, frequently failed to accomplish their objective.

Another disadvantage was the fact that individual bottling plants had no facilities for assembling boxes. Containers were assembled for shipment to the bottling plants at Royal Crown's headquarters in Columbus, Ga. This required the service of one man for 30 hours each week.

(*Continued on next page*)

FLUIDICS* AT WORK

How to be sure about flavor when you store

The exact flavor you put into these Glasteel storage tanks is the flavor you take out.

Today. Tomorrow. And for many, many years. Because unlike many materials, Glasteel has *no* flavor.

With Glasteel (glass inside, steel outside) you provide positive protection for the flavor, color, and aroma of your product. Even substances which might corrode other materials have no effect on Glasteel. It is inert.

As for cleaning, the phrase "smooth as glass" tells the story. A Glasteel tank has a hard, non-porous surface. It is extremely difficult for sticky substances to take hold. Result? Easy thorough cleaning—and you can sterilize a Glasteel tank.

Pfaudler glass will not shatter, because it is permanently bonded, both physically and chemically to the steel.

That this material has long been the standard for the pharmaceutical industry—with its emphasis on safety and purity—probably comes as no surprise.

You can get Pfaudler Glasteel storage tanks in sizes ranging from 500 to 35,000 gallons, horizontal or vertical. Openings are arranged to meet your specific needs.

For details on the many now-and-tomorrow advantages of Glasteel in food processing, contact our Pfaudler Division, Dept. **FP-20,** Rochester 3, N. Y.

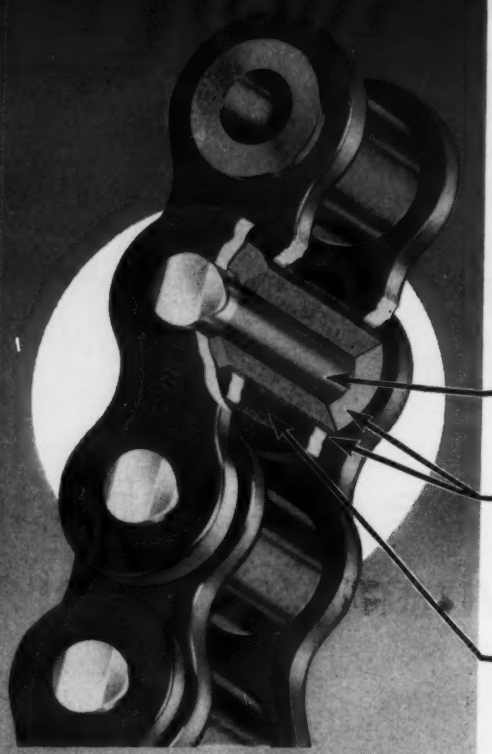
*FLUIDICS is a new Pfaudler Permutit program that integrates knowledge, equipment and experience in solving problems involving fluids.

PFAUDLER PERMUTIT INC.
Specialists in FLUIDICS . . . the science of fluid processes

6475 on Reader Service Slip.

WHITNEY MSL* CHAIN PROVIDES COMPLETE

BUILT-IN LUBRICATION AT ALL 3 CRITICAL AREAS



Whitney MSL Chain is lubricated for life by oil-impregnated, sintered steel bushings—an exclusive development of Whitney Research. With this development, Whitney solves a basic chain problem . . . **more damage is caused by faulty chain lubrication than by years of normal service.** Pressure and heat cause built-in lubricant to expand and flow from bushings, providing a constant supply of lubricant to every working part of the chain. When drive stops, bushings re-absorb oil, ensuring a permanent oil supply for the life of the chain. By solving the lubrication problem, and because of other important design advantages, Whitney MSL Chain outlasts conventional chain as much as 5 to 1 in severe operating environments.

Critical Area 1

PIN—Protective film of oil completely lubricates the live bearing area between pin and bushing, minimizing wear by reducing metal-to-metal contact.

Critical Area 2

PLATES—Whitney oil-impregnated sintered steel bushings extend beyond surface of inside plates to: act as lubricated thrust bearings, control clearance, and provide an oil cushion between plates, eliminating plate galling and seizing frequently caused by misalignment of sprockets.

Critical Area 3

SPROCKET ENGAGEMENT—Oil film on exterior surface of Whitney MSL Sintered Steel Bushings provides constant lubrication between sprocket teeth and chain. Whitney MSL Chain requires no rollers, as the tough oil film on the bushing surface provides smooth sprocket engagement, cushions impact and reduces drive wear.

WHITNEY MSL CHAINS MEET ASA STANDARDS

All essential dimensions of Whitney Standard and Extended Pitch MSL Chain conform fully to ASA Standards, making it completely interchangeable with any similar pitch ASA standard chain, simplifying specification for new equipment, or as a replacement for existing drives.

Whitney MSL Chain is carried in stock by Distributors in all parts of the United States, for prompt delivery.

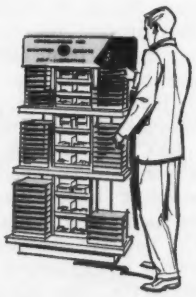
Whitney oil-impregnated bushings—developed through continuous Whitney Research—are produced exclusively by Whitney to assure MSL Chain users of highest quality and reliability.

Inherent material characteristics of Whitney Sintered Steel Bushings, plus bushing configuration that provides greater contact area between bushings and links, permit high interference fit, which pre-loads links and gives maximum fatigue resistance.

Controlled clearance between plates promotes self-cleaning action.

*** Maximum Service Life**

MSL Chain is carried IN STOCK by your Whitney Distributor. Ask him to show you how and why Whitney MSL Chain gives you more chain drive value per dollar.



THE WHITNEY CHAIN COMPANY
a subsidiary of FOOTE BROS. GEAR AND MACHINE CORPORATION
4555 S. Western Blvd., Chicago 9, Ill.

POWER TRANSMISSION DRIVES

6476 on Reader Service Slip.

(*Continued from preceding page*)

Furthermore, the company had to pay the freight bills for shipping 12 of the empty, assembled boxes to each of the bottling plants each year. And when boxes were filled, they could not be sent back by parcel post (which would have been the least expensive method for shipping) because the packages were too fragile.

A specially designed, corrugated box with only two inserts now permits safe shipment of bottled test samples to central testing lab from individual plants.

Each insert, in the shape of a horizontal square, contains six die-cut holes. One of the inserts fits into the box about one inch from the bottom. Bottles are arranged circularly so that each bottle fits into one of the six die-cut holes.

The second insert is placed over the bottles about one inch from the top of the box. This cross bracing holds the bottles firmly in place, eliminating need for side or bottom padding.

New corrugated box has a bursting test of 200 pounds per square inch, and a maximum of 65 pounds gross weight loaded. When empty it weighs ten ounces less than its original counterpart.

Reduced number of inserts and elimination of pads provides greater shipping capacity than with the old containers.

One year's supply of boxes can now be shipped flat to each of the bottling plants. All the bottler has to do is snap the boxes into position when needed, and put in the two inserts which hold the bottles firmly in place.

One man now prepares yearly box requirements for all 460 plants in one week's time. This represents a savings of almost the yearly salary of one man.

Change in cartons has also resulted in savings on shipping costs. Formerly it cost on the average of $2.50 to reship each filled carton back to the lab. It now costs only $1.19 for the average shipment. (Average costs are given in consideration of the fact

that bottlers are at varying distances from the lab.)

This is a savings which is realized 12 times a year since the 460 bottlers ship samples to the central labs once each month.

Cost of the new containers has also meant considerable savings for Royal Crown . . . for the new container costs about 21 cents each as compared with 60 cents each for the old cartons.

(Containers used by Royal Crown Cola Co. for shipping bottled test samples to testing lab were manufactured by Union Bag-Camp Paper Corporation, 233 Broadway, New York 7, N. Y.)
6477 on Reader Service Slip.

Evaporation analysis of up to 12 samples at once

Uses-Features: Designed to expedite analyses of small fractions, high speed analytical evaporator provides simultaneous evaporation of solvent from six samples in 50 ml Erlenmeyers or 12 samples in test tubes of 24 mm maximum diameters.

Description: Basic assembly consists of a support stand, sample holder, gas manifold, and twelve gas injectors with individual needle valves to control rate of flow.

Height of gas injectors can be individually adjusted and readily readjusted as evaporation proceeds. A small thumb screw permits entire assembly to be secured at desired height on support stand.

Assembly can be freely rotated, giving access to each sample from the front.

A thermostatically controlled water batch permits samples to be evaporated at constant temperature, adjustable from 35 to 70 C. Entire evaporator occupies bench space only 12 inches square and requires maximum height of 30 inches above the bench.

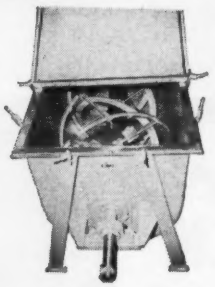
(High-speed analytical evaporator, N-EVAP, is product of Organomation Associates, PO Box 5, Turnpike Station, Shrewsbury, Mass.)
6478 on Reader Service Slip.

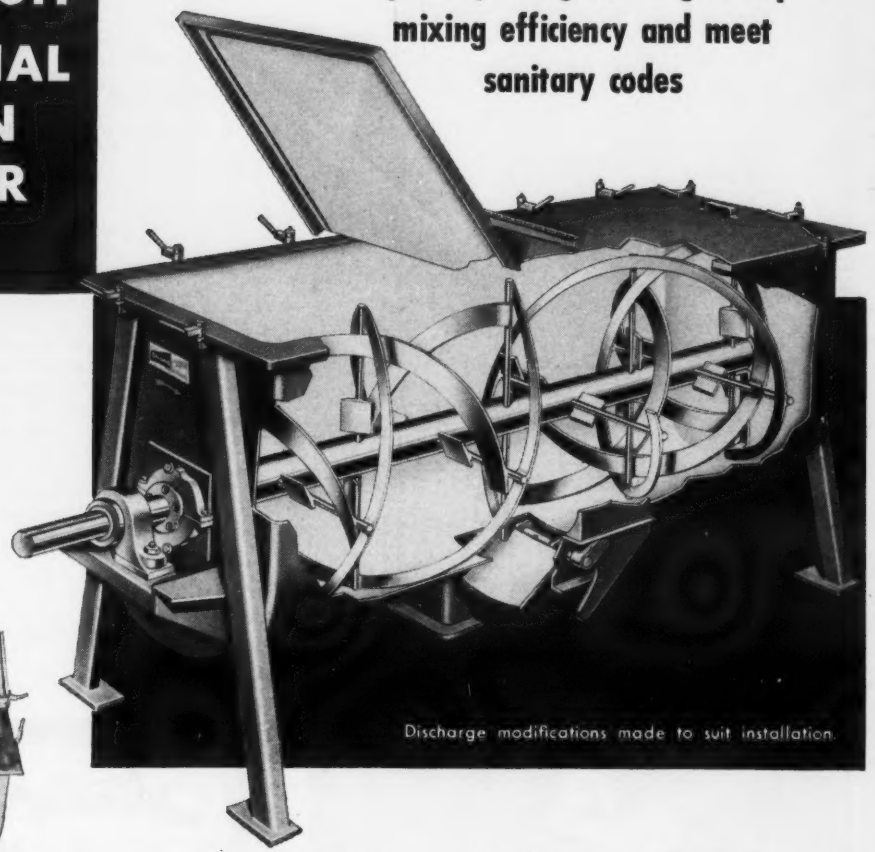
NEW...

STRONG-SCOTT INDUSTRIAL RIBBON BLENDER

Specially designed to give top mixing efficiency and meet sanitary codes

Rounded tub ends prevent material hang-up, neoprene cover-seals provide dust-tight fitting.





- Swing or slide-type discharge gate, curved to eliminate dead pocket.
- Unique coupling permits vertical removal of agitator assembly without disturbing shaft ends and bearings.
- Heavy-duty, outboard anti-friction bearings.
- Air-purge, lip seal or stuffing box seals readily removed for quick cleaning.
- Dust-tight covers, with quick-action clamps.

Top mixing efficiency with the new Strong-Scott Ribbon Blender mixer on dry or semi-dry materials, has been proven through continuous testing. The Ribbon Blender also meets requirements of health codes where necessary.

The ability to thoroughly and quickly mix is provided by a unique "ribbon assembly." The smallest amount of additives are thoroughly mixed in a matter of minutes. Special smooth-surface, cornerless welding and rounded corners throughout, leave no place for material to gather. The cover is seal-tight for maximum cleanliness and dust control.

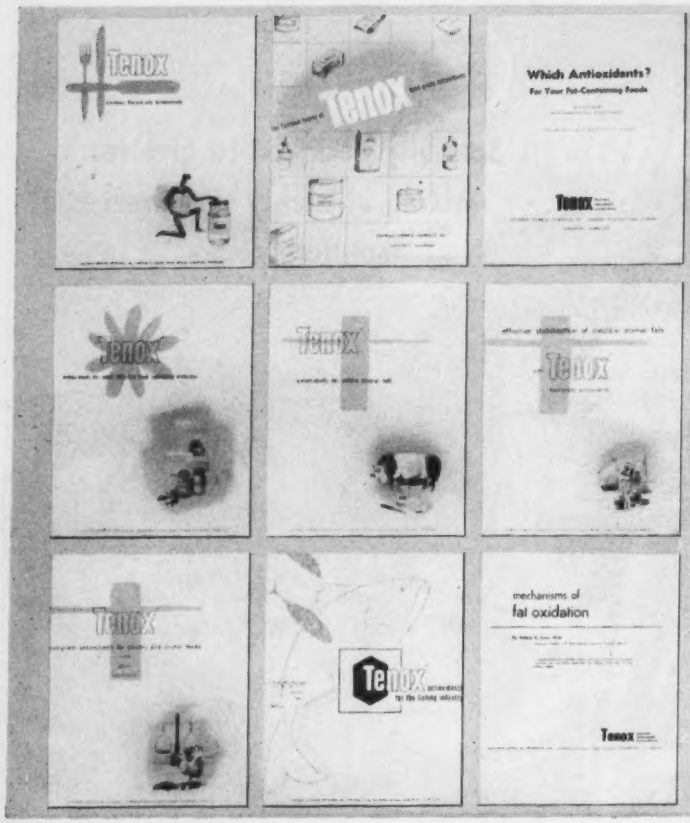
Nine different size units ranging from 16 to 300 cubic feet working capacity are available in stainless steel or carbon steel. Jackets for heat transfer mediums also available.

PLAN '59 Modernize now for growth and profits

The Strong Scott Mfg. Co.

Dept. FP, 451 Taft Street N. E., Minneapolis 13, Minnesota

6479 on Reader Service Slip.



This literature on **Tenox**® can help you broaden your product line ...expand your marketing area

- Tenox—Eastman food-grade antioxidants
- The Eastman family of Tenox food-grade antioxidants
- Which antioxidants for your fat-containing foods?
- Tenox antioxidants for more effective food packaging materials
- Tenox antioxidants for edible animal fats
- Effective stabilization of inedible animal fats with Tenox
- Tenox feed-grade antioxidants for poultry and animal feeds
- Tenox antioxidants for the fishing industry
- Mechanisms of fat oxidation

Eastman manufactures all the principal types of food-grade antioxidants in use today and supplies them in a variety of formulations. Because of this unique position we can suggest the antioxidant or formulation most effective for your product. Behind this service is a fully-equipped laboratory staffed with antioxidant specialists with years of experience in the food field.

For your copy of any of these pieces of literature, write Eastman Chemical Products, Inc., subsidiary of Eastman Kodak Company, Kingsport, Tennessee.

Tenox® Eastman food-grade antioxidants

6480 on Reader Service Slip.

EDMONT CASE NO. 626: Handling boxed fruit in a Michigan packing plant, canvas gloves lasted 1-½ days. Edmont recommended a new vinyl-impregnated glove with non-slip grip (No. 151 Werx). It wore 9 days, each pair handling an average of 675 tons of boxed fruit, for a 69% saving.

Werx glove outwore canvas 6 to 1

No. 151 Werx

In case above, the Edmont-recommended glove outwore canvas and reduced glove costs 69% because it fit the job. Its vinyl-impregnated fabric allows bare hand dexterity, provides a non-slip grip and even outwears expensive goatskin on many jobs. It keeps out dirt but lets the hands breathe, and is completely washable.

Free Test Offer To Listed Firms: We make more than 50 types of gloves. Describe your operation, materials handled and temperature condition. We will send samples of the correct glove for comparison testing on-the-job.

Edmont JOB-FITTED **GLOVES**

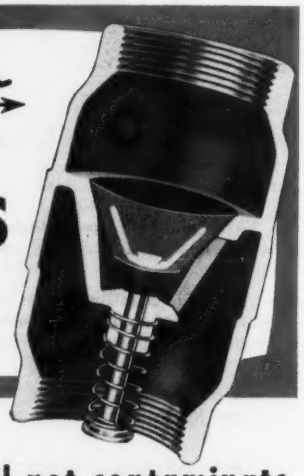
Edmont Manufacturing Company
1212 Walnut Street, Coshocton, Ohio
In Canada write MSA, Toronto

6481 on Reader Service Slip.

Strataflo

CHECK VALVES

for semi-solid and liquid food handling equipment



New valve resists acids, will not contaminate

The new No. 3300 Strataflo Check Valve is designed to eliminate many of the problems encountered in semi-solid and liquid food handling equipment. Acids cannot harm the rugged one-piece body which is cast of a high nickel alloy. A large port area and unique straight line flow give greater capacity with low restriction. There are no "pockets" to fill up and encourage contamination. Easily cleaned by back-flushing. Leak-proof Neoprene poppet is non-toxic, odorless and tasteless. Valve will operate in any position; 200 lbs. working pressure. Write for Bulletin 208 for information and prices.

STRATAFLO PRODUCTS, INC.
FORT WAYNE, INDIANA

6482 on Reader Service Slip.

quality control

Breakthrough in chromatography

A commercially practical preparative gas chromatograph has been announced. Features, applications, technical data and a photograph of the unit are contained in a 4-page bulletin.

Instrument uses the separatory power of chromatography to fractionate and collect samples of ultra-pure materials in volumes 100 times larger than possible with existing chromatographs, with no sacrifice in resolution.

This makes sizable quantities of ultra-pure materials available which have previously been barely visible or seen only as traces on a recorder chart.

Applications include studies on materials which are volatile at temperatures up to 450 C (752 F), with samples as large as 20 milliliters. In the food field, instrument will have use for studies on flavors and aromas and synthesis of flavors as well as food additives.

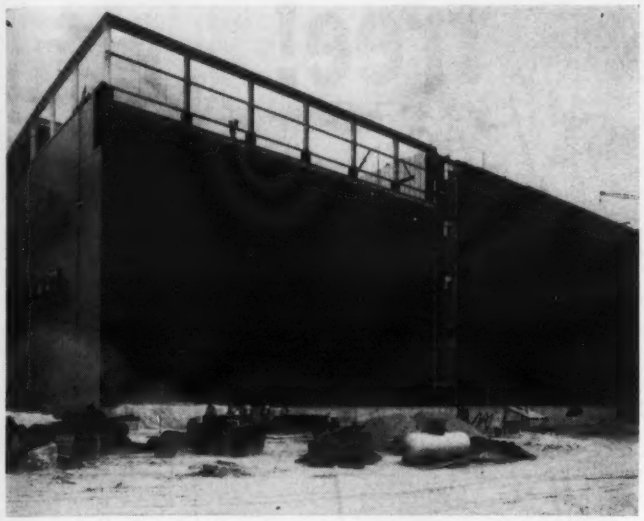
(Bulletin on "Megachrom Preparative Gas Chromatograph" is available from Beckman/Scientific and Process Instruments Div., 2500 Fullerton Rd., Fullerton, Calif.)
6483 on Reader Service Slip.

Lab instrument catalog

Twenty-one laboratory instruments are described and illustrated in 12-page catalog. Included are pH meters and other electrochemical instruments, ultraviolet, visible and near-infrared spectrophotometers, infrared spectrophotometers, gas chromatographs and oxygen analyzers.

Typical applications for each general class of instruments are given as well as a discussion of the sales and service facilities of the manufacturer available for particular requirements.

("Catalog of Laboratory Instruments", Bul 757, is available from Beckman Scientific and Process Instruments Division, 2500 Fullerton Rd., Fullerton, Calif.)
6484 on Reader Service Slip.



At Schlitz Brewing Company, major portion of five-story plant and, highest where insulation is used as outside walls, is 83 ft high. Brewery has annual capacity of 1,000,000 barrels

Replace masonry with insulation for self-supporting outside walls

- **speeds construction**
- **saves materials**

CELLULAR, glass-block insulation has high compressive strength (over 14,000 lb/-sq ft), can therefore be used to lay up outside walls. Thus, usual method of first constructing masonry wall and then lining it with insulation is bypassed.

In building plant of Joseph Schlitz Brewing Company at Industrial Park in Tampa, Fla., walls were constructed of two layers of glass block: one layer 2 in. thick, the other 3 in. thick. (Insulation was also used in two layers on roof: one layer 2 in. thick and one 4 in. thick.)

Moisture penetration was no problem since insulation, made up of thousands of tiny, sealed glass cells, is unaffected by it.

Exterior of structure was sheathed with aluminum siding, thus making it an especially attractive building.

(Foamglass is a product of the Pittsburgh Corning Corporation, 1 Gateway Center, Pittsburgh 22, Pa.)

6485 on Reader Service Slip.

The big PLUS SERVICE EXPERIENCE RESEARCH PERFORMANCE in Oakite

New, longer-lasting chain lubricant cleans while it lubricates

CONTINUING RESEARCH in materials opens new opportunities for up-dating maintenance and saving time and money.

Chain lubrication, done the Oakite way, for example, can help you cut down "bottlenecks" and bottle breakage. With newly developed Oakite LC106, chains get the "slip" that reduces gate pressure, bottle impact and jam-ups. It keeps chains clean . . . free of bottle soiling build-up. It reduces drag on motor, also cuts downtime for maintenance.

On top of this, users report up to 25% better "mileage" than previous material. As another "PLUS" a wide range of Oakite Lubricators is made available for continuous application of lubricating solution at proper rate without waste or drippage.

The big PLUS in Oakite

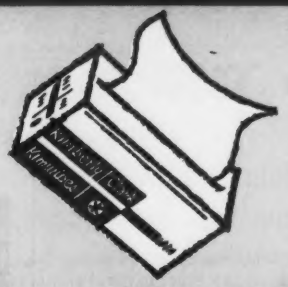
With every keg of Oakite material, you get plus benefits that help you reduce your cleaning costs. There's the personal help of the Oakite man, the experience of the entire Oakite organization; the latest information on modern cleaning methods to save extra work and time; *guaranteed* results; constant research devoted to development of newer, better materials. Ask your local Oakite man. Or, send for Bulletin F-10347. Oakite Products, Inc., 27A Rector Street, New York 6, N. Y.

SPECIALIZED INDUSTRIAL CLEANING
OAKITE
MATERIALS · METHODS · SERVICE
SCIENCE
in our 50th year

Export Division Cable Address: Oakite

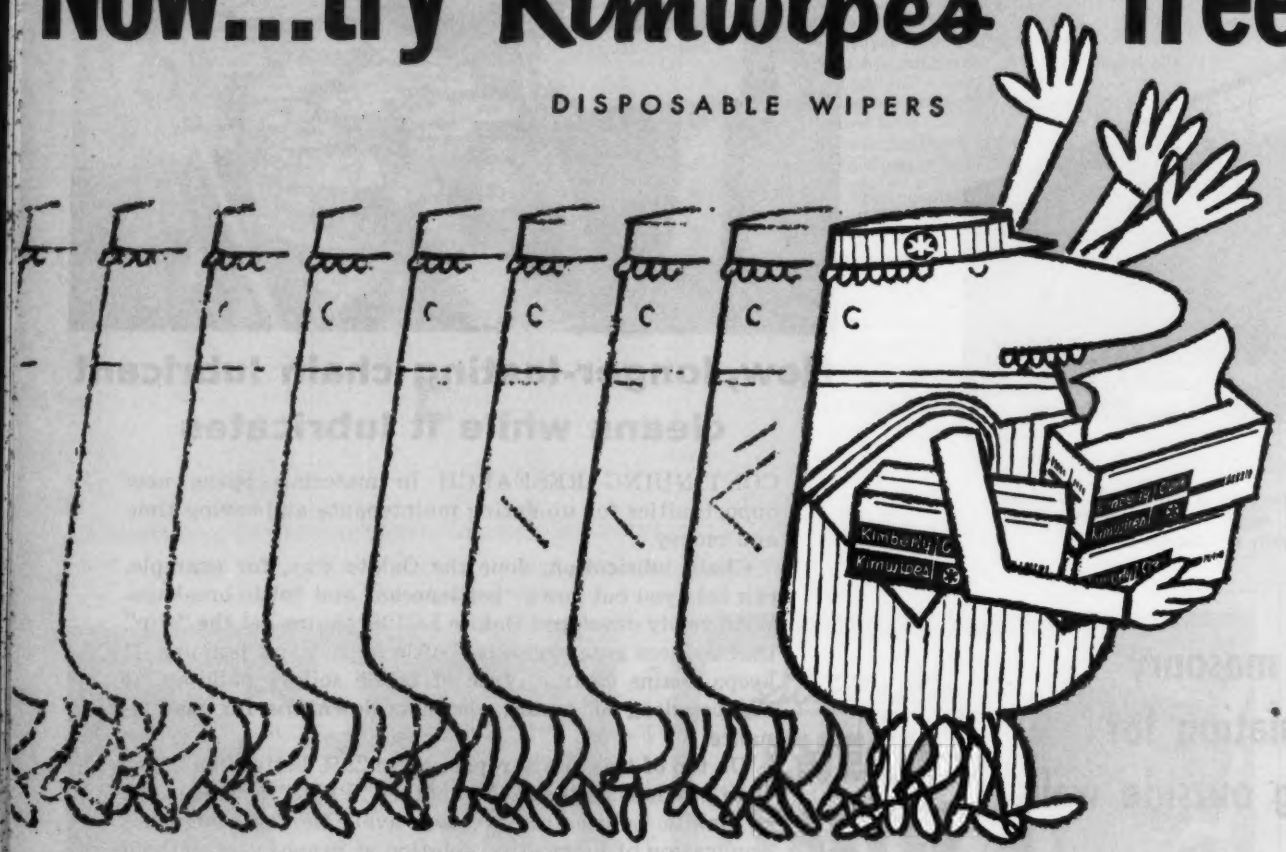
Technical Service Representatives in Principal Cities of U. S. and Canada

6486 on Reader Service Slip.



Now...try Kimwipes® free!

DISPOSABLE WIPERS



Mail the coupon *today* so that we can rush you your FREE box of 100 Kimwipes disposable wipers. Try Kimwipes in your plant to prove to your own satisfaction that they perform better than cloth towels in food processing operations.

Use Kimwipes for quick, thorough absorption of shortening oils and grease. Use them *wet* for easy removal of sticky frosting, syrups, sugar and flour from workers' hands and machinery. Use both *wet* and *dry* for keeping equipment clean and sanitary. Available in handy pop-up packages or metal wall dispensers.

Super-sanitary Kimwipes pay for themselves in savings on towel laundering, alone!

Kimberly-Clark Corporation
Dept. No. FP-20
Neenah, Wisconsin

Fill in this coupon, and mail it, today!

Please send me my FREE package of Kimwipes disposable wipers, "900-L."

NAME_____

FIRM NAME_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

By the makers of KLEENEX tissues...

Kimberly-Clark

PRODUCTS

Plants, Companies, Personalities

Corn Products Company

has promoted A. N. McFarlane from vice president, sales, to senior vice president.

He has been with Corn Products since 1934, when he joined the company's technical service department in Argo, Ill.

General Foods Corporation

has promoted Norman Vanasse to manager of packaging design and development for the Birds Eye division. He had been assistant manager.

H. J. Heinz Company

Pittsburgh, has promoted Ian MacPhail within its Research and Quality Control Division from statistical quality control to manager, factory quality control. With Heinz since 1924, he succeeds M. L. Crouthamel, who has retired.

Chun King Enterprises

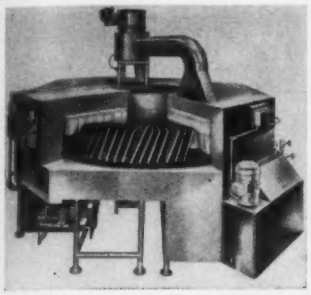
Duluth, Minn., has named Leonard C. Underdahl executive vice president and general manager of Northland-CK Foods Marketing Division. Philip A. Mark is vice president and product manager of the new division, which has purpose of developing a national market for company's dessert and pie fruits and berries, and also for its Italian foods and wild rice products.

For more information on product at left, circle 6487 see information request blank opposite last page.

Washes and dries 1000 pans/hr

Uses: For washing sheet pans, table of machine can also be constructed to clean layer cake pans, shelf rack and other items up to 21 in. high.

Features: Packaged pan washer is operated by only one man, yet can clean over 1000 pans per hr.



Washer requires approximately 13 by 13 ft floor area

It is shipped in two sections and need only be bolted together for installation. Wiring is complete, ready for operation.

Description: Cleaning cycle consists of hot, high-pressure wash which is followed by recirculating rinse, and fresh-water rinse. Hot-air dryer finishes process.

Wash and rinse tanks have stainless steel screens and top access panels. Dryer is insulated; can be gas fired or steam heated.

(Turntable Washer, Model 1340, is a product of The Alvey-Ferguson Co., 5916 Disney St., Cincinnati 9, Ohio.) 6488 on Reader Service Slip.

All-plastic piping system

Made from Type I ABS material, system is resistant to chemicals; is non-toxic, odorless and tasteless. It has relatively high impact strength and toughness from −40 to 170 F.

Piping, fittings and valves are fully described in 16-page technical bulletin. There is a

(*Continued on next page*)

GLOSS *Paramount Style*

How Durkee's Continuing Research Kept Coatings from Turning Gray

THE PROBLEM: *find a better hard butter.* Durkee's Technical Research Staff set out to find one. They wanted a hard butter that would produce confectioners' coatings with better performance characteristics than existing coatings. Specifically, they wanted high gloss retention, greater stability and resistance to bloom under all temperature conditions.

THE SOLUTION: *methodical.* Durkee research went to work. Coating after coating was tested in the laboratories . . . placed in cycling cabinets which duplicated shelf temperature changes . . . checked by taste panels . . . subjected to exact conditions encountered in the plant. Durkee even built a pilot plant with miniature equipment to simulate actual plant conditions. As a result, a hard butter for making coatings that met every industry requirement was developed. Durkee named it Paramount; confectioners call it "wonderful".

THE SIGNIFICANCE: *clear.* Durkee has been researching fats and oils for 40 years—and is still hard at it. The development of Paramount is typical of purposeful research continually in progress in Durkee's Technical Service Laboratories. Here is where we may be able to help you most whenever your product or process warrants further attention. We'd be glad to help. Just 'phone us or write.

DURKEE TECHNICAL SERVICE

DURKEE FAMOUS FOODS • 2333 Logan Blvd. • Chicago 47, Illinois
Jamaica, New York • Louisville, Kentucky • Berkeley, California

Glidden QUALITY PRODUCTS

6489 on Reader Service Slip.

(Continued from preceding page)

section covering properties and characteristics such as flow rate vs. loss of head.

There are also several pages devoted to installation instructions. Subjects such as threaded and solvent-welded joints, piping supports, and forming and bending are discussed in detail.

("Plastic Pipe, Fittings and Valves," Bulletin CE-80, is available from the Amerace Corporation, American Hard Rubber Company Division, Ace Road, Butler, N.J.)
6490 on Reader Service Slip.

Switch from hand scrubbing to mechanized hot spray

Cuts cleaning time over 50%

Problem: At Viroqua Co-Operative Creamery Co., Viroqua, Wis., 3 men needed about 4 hours to clean three medium-sized spray dryers by hand.

Solution: As an alternate to complete CIP system, a mobile, hot spray unit was tried.

Milk dryer prior to cleaning (above), and after cleaning with screw removed (below). Cleaner is made up in solution of ½ to ¾ oz/gal

Sequence of cleaning is as follows. After equipment has cooled, surplus powdered milk

DOW | INSULATION

THIS MAN KNOWS STYROFOAM®

AND LOW-TEMPERATURE INSTALLATION, TOO

HE'S AN APPROVED INSULATION CONTRACTOR, typical of the special group of low-temperature insulation contractors that Dow has selected for their outstanding experience and abilities in installing Styrofoam*. Each Approved Insulation Contractor listed below has a reputation for top-quality workmanship. All 77 of these firms are thoroughly familiar with Dow recommendations for installing Styrofoam, and they are committed to follow these recommendations on every job.

Consult an Approved Insulation Contractor when you're planning your next freezer or cooler room. The superior *insulating* performance of Styrofoam, teamed with the superior *installing* performance of an Approved Insulation Contractor, is your assurance of a top-quality job.

*DOW'S TRADEMARK FOR ITS EXPANDED POLYSTYRENE.

SAVE THIS LIST FOR REFERENCE

For the best low-temperature installation, get in touch with the Approved Insulation Contractor near you.

ALABAMA
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Badham Insulation Company, Inc.

ARIZONA
Phoenix
Barrett & Homes
Tucson
Arizona Insulation Company, Inc.

ARKANSAS
Little Rock
J. C. Lewis Company

CALIFORNIA
Fresno
Fiberglas Eng. & Supply Div.
Los Angeles
Armstrong Contracting & Supply
Fiberglas Engineering & Supply Co.
Los Angeles Cork Company, Inc.
Los Angeles Ind. Bldg. Materials, Inc.
North Sacramento
Fiberglas Engineering & Supply Div.
San Francisco
Fiberglas Engineering & Supply Div.
Peterson-Cobby Insulation, Inc.

CONNECTICUT
Bloomfield
W. L. Walker Company

COLORADO
Golden
Denver Lining Company

FLORIDA
Haines City
R & S Insulation Company
Jacksonville
Insulation Contractors
Miami
L. L. Jackson, Inc.
Tampa
Gulf Coast Insulation Company, Inc.

GEORGIA
Atlanta
Asbestos Insulation Company, Inc.

INDIANA
Indianapolis
Indiana Asbestos Company, Inc.

ILLINOIS
Chicago
Cork Insulating Company, Inc.
East Moline
Low-Temp Insulations
Schiller Park
Albert H. Bromann, Jr., Inc.

KANSAS
Kansas City
Mid-Continent Ind. Insulation, Inc.
Preston Refrigeration Company

KENTUCKY
Louisville
Cardinal Industrial Insulation, Inc.

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Taylor Contracting & Supply Co.

MAINE
Lewiston
Northeastern, Inc.

MARYLAND
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Cheverly
Frank Heintze Company, Inc.

MASSACHUSETTS
Walpole
Allied Cork, Inc.

MICHIGAN
Detroit
Chrysler Koppin Company, Inc.
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Tony Batenburg Insulation Co.

MINNESOTA
Minneapolis
General Adhesives Products Co.
Hauenstein & Burmeister, Inc.
Insulation Sales Company, Inc.

MISSOURI
St. Louis
Young Sales Corporation

NEBRASKA
Omaha
Low-Temp Insulations

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Cork Insulation Contracting Co.
Buffalo
The Jewett Refrigerator Co., Inc.
Forest Hills
Charles M. Trojahn
New York
Eastern Cold Storage Insul. Co., Inc.
Globe Cork Insulation Company
Martin & William Smith
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Kingston
Culp Industrial Insulation Company
McKees Rocks
Geo. V. Hamilton, Inc.
Telford
Walter R. Dorn Estate

RHODE ISLAND
Providence
Rhode Island Covering Company

SOUTH CAROLINA
Columbia
Bonitz Insulation Company of South Carolina

TENNESSEE
Memphis
Chris Fiedler Company, Inc.
Nashville
Young Sales Corporation

TEXAS
Dallas
Southwest Cold Storage Vault Co.
Houston
Gulf Insulating Corporation
Amarillo
Young Sales Corporation

VIRGINIA
Norfolk
C. C. Foreman & Sons, Inc.
Roanoke
Whitescarver Engineering Co., Inc.

WASHINGTON
Seattle
Associated Asbestos, Inc.
Fiberglas Engineering & Supply Div.
Spokane
Fiberglas Engineering & Supply Div.
Yakima
Reese & Sons

WEST VIRGINIA
Charleston
Asbestos & Insulating Co., Inc.

WISCONSIN
Madison
Industrial Material Company
Milwaukee
Sprinkmann Sons Construction Co.
Manitowoc
Northwestern Asbestos & Cork Insulation Company, Inc.

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

6491 on Reader Service Slip.

is swept out and dryer is given a preliminary water rinse. Next, it is sprayed with hot (160 F) detergent which is allowed to soak. After a second spray and soak cycle, operation is completed with warm-water rinse.

Cleaner used has a pH of 13 and is a blend of polyphosphates, silicates, carbonates and anionic, surface-active agents.

Results: Aside from being able to bring dryer back into production faster, one man now cleans one medium-sized unit in 1½ hours — a job which formerly took 4 hours. Further, discomfort and hazard of working for long periods in confined areas are eliminated.

(Alkaline cleaner, No. 62, and hot-spray unit are products of Oakite Products, Inc., 19 Rector St., New York 6, N.Y.)
6492 on Reader Service Slip.

Multi-purpose repair mix

Chemical compound can be troweled to feather-edge; can be sanded or machined after hardening

Uses: For filling breaks, holes and cracks in walls, floor or curbs; on machinery, fixtures, tanks or pipes.

Features: All-purpose, general repair material can be used to permanently patch materials such as masonry, metals, wood, ceramics, glass and most plastics.

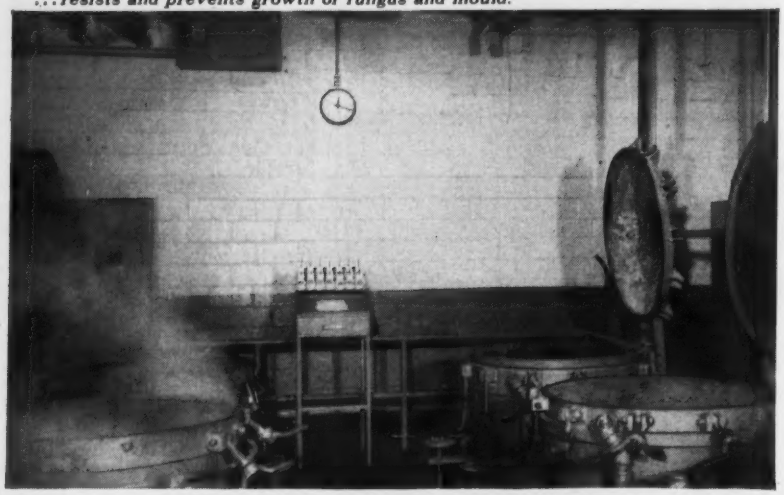
Mix can be troweled to fine edge and, after curing, can be sanded, drilled and machined to smooth surface.

Description: Repair kit consists of 2 cans of equal size: one contains the white epoxy resin; the other the black polyamide hardener. Compound is prepared by mixing two resins in equal parts at job site.

Kit is supplied in quart, half-gallon and 2-gallon sizes.

("Plastic Mastic" repair kit is a product of Williamson Adhesives, Inc., 8220 Kimball Ave., Skokie, Ill.)
6493 on Reader Service Slip.

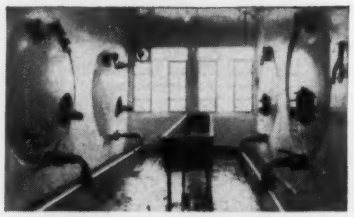
SANITILE resists constant steam exposure from processing kettles in cannery ... resists and prevents growth of fungus and mould.



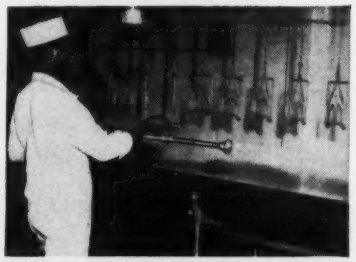
SANITILE WALLS

at less than 1/15th the cost of tile

Achieve the sanitary advantages of tile for a few cents a square foot. Enjoy low-cost security against food contamination with one-piece, joint-free Sanitile. Sanitile creates a hard, gleaming ceramic-like surface... Protects against conditions destructive to walls and ceilings that are part of food processing. Thousands of plants around the globe rely on SANITILE and our 46 years of specialized food plant experience—to gain utmost protection and economy. Easily applied by brush, roller or spray without interrupting processing. Write for specifications covering your plant. The Master Mechanics Co., East 175 St. at Miles, Cleveland 28, Ohio—The Master Mechanics Chemicals Co. (Canada) Ltd., Toronto, Ontario.



One-piece, joint-free walls in milk bulk-storage area prevent harboring of bacteria—resist alkaline sterilizers and lactic acid.

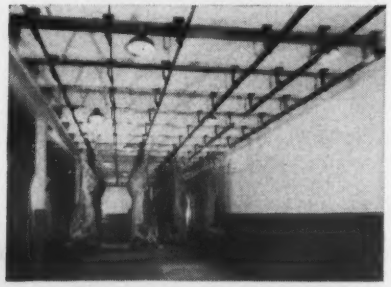


Steam cleaning in large poultry plant illustrates Sanitile's resistance to thermal shock, blood, animal residue and daily washing.

Serving the Food Industry since 1913

MASTER MECHANICS

Bakery walls stay gleaming—resist oil and grease deposit.



Gleaming ceramic-like surface of Sanitile resists condensation and moisture in chill-rooms and sales coolers.

6494 on Reader Service Slip.

Many uses for low K-factor insulation

At mean temperature of 75 F, thermal conductivity of expandable polystyrene is 0.242 (2 lb/cu ft density). Other characteristics of insulation such as compressive strength, tensile strength and water vapor transmission are tabulated in six-page brochure.

Various uses for foamed plastic insulation, such as freezer rooms, are illustrated with photos and charts.

In addition, there are graphs which show variation of thermal conductivity with respect to temperature and density. A table graphically compares K-factors of various insulating materials.

("Dylite®," Bulletin C-9-271, is available from Koppers Company, Inc., Plastics Division, 801 Koppers Building, Pittsburgh 19, Pa.)
6495 on Reader Service Slip.

Combines more light with improved color rendition

New deluxe cool white power groove fluorescent tubes achieve as much as 11 per cent more light besides improving color stability and color maintenance.

High-compatibility phosphors, which add a higher component of red to the normally cool color of fluorescent light, enable tubes to more faithfully reproduce warmer color tones of whatever is lighted.

(Improved fluorescent tubes are a product of General Electric, Nela Park, Cleveland 12, Ohio.)
6496 on Reader Service Slip.

Summarizes ultrasonic cleaning

High-frequency sound waves, generated by a transducer, agitate cleaning solution, causing it to cavitate or "cold boil."

Agitation is the result of millions of submicroscopic bubbles forming and collapsing. As bubbles bombard any surface set in their path, they produce a violent scrubbing or soil removing action.

Four-page bulletin which describes action of ultrasonic cleaning in detail also discusses cleaning compounds which have proven to be most effective with this cleaning method.

Literature also tabulates six helpful pointers which are among the most important factors that apply to all ultrasonic cleaning operations.

("How To Get The Most Out Of Ultrasonic Cleaning," Service Bulletin 16A, is available from Oakite Products, Inc., 127A Rector St., New York 6, N.Y.)
6497 on Reader Service Slip.

Non-foaming acid cleaner

Uses: For dairy plants and farms, and general food plant equipment.

Features: Solution of cleaner will not foam when circulated at high pressures or in vacuum.

Effective in all types of water, it will remove milkstone and waterstone deposits and rinse freely.

Description: Clear liquid cleaner penetrates film, produces effective wetting, and dissolves and suspends film solids in solution.

It will work at higher temperatures for circulation cleaning as well as in lukewarm water for manual cleaning.

(D-Kal acid cleaner is a product of the Pennsalt Chemicals Corporation, Department B-K, 3 Penn Center, Philadelphia 2, Pennsylvania.)
6498 on Reader Service Slip.

For more information on developments described here, use the convenient self-mailing Reader Service Slip.

Association News

Corn Industries Research Foundation, Inc.

announces election of Frank K. Greenwall, board chairman of National Starch and Chemical Corporation, as president. The Foundation has approved continuance of existing research studies in corn and its components and authorized several new investigations — in a program totaling $250,000 for the yr. The Foundation's research program supplements the research efforts of the individual corn refining companies, and is administered by an industry-wide committee of company scientists.

American Meat Institute Foundation

Chicago, not-for-profit research and educational institution located at and affiliated with the University of Chicago, has elected as board chairman Louis F. Long, president of The Cudahy Packing Company. Porter M. Jarvis, president of Swift & Company, was elected vice chairman of the AMIF board.

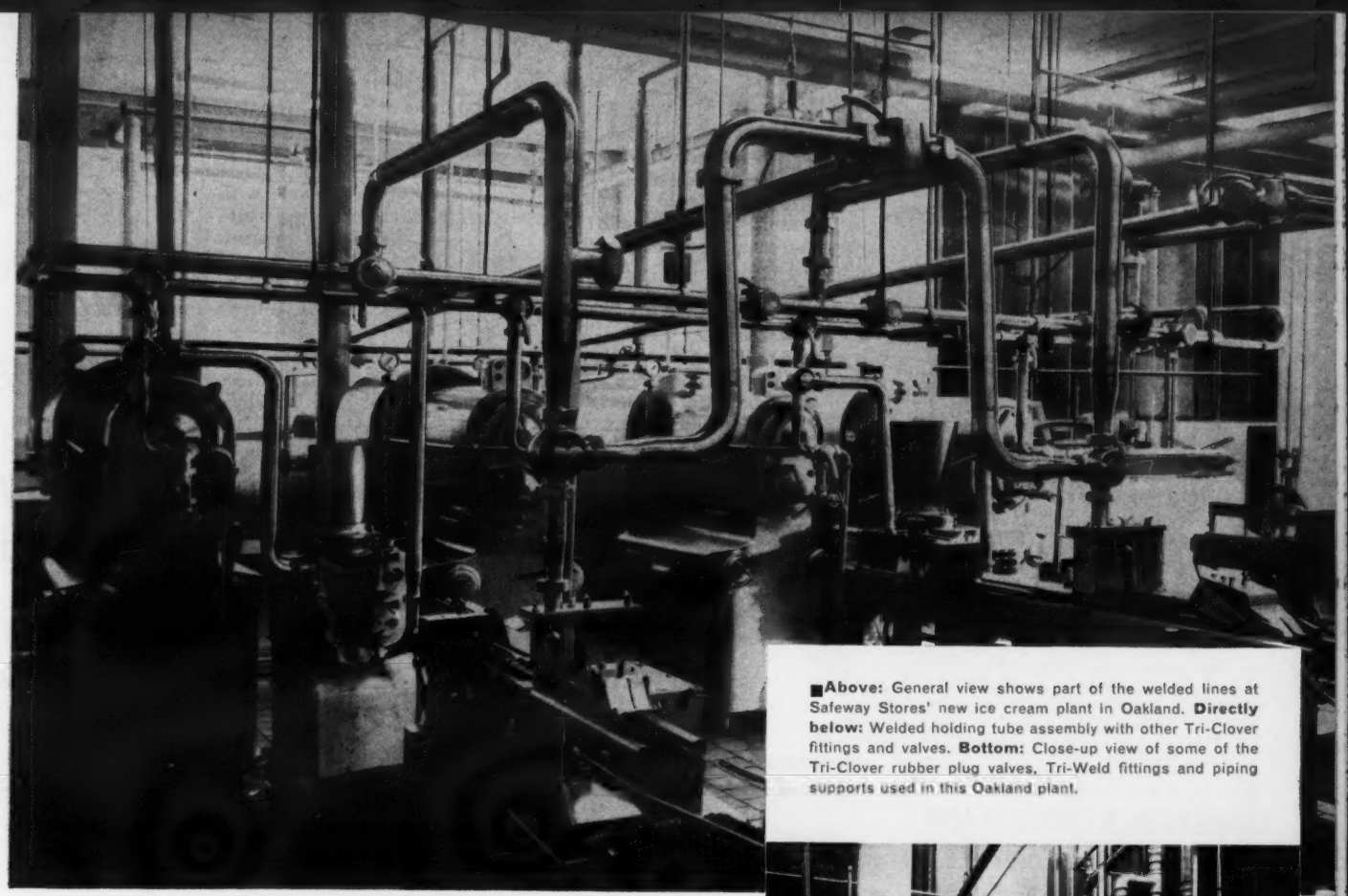
Wine Institute

San Francisco, announces appointment of Milton Silverman, Ph.D., as director of medical research for the California wine industry. He will attempt to speed advances in this general field of wine research, and report them promptly to the medical profession.

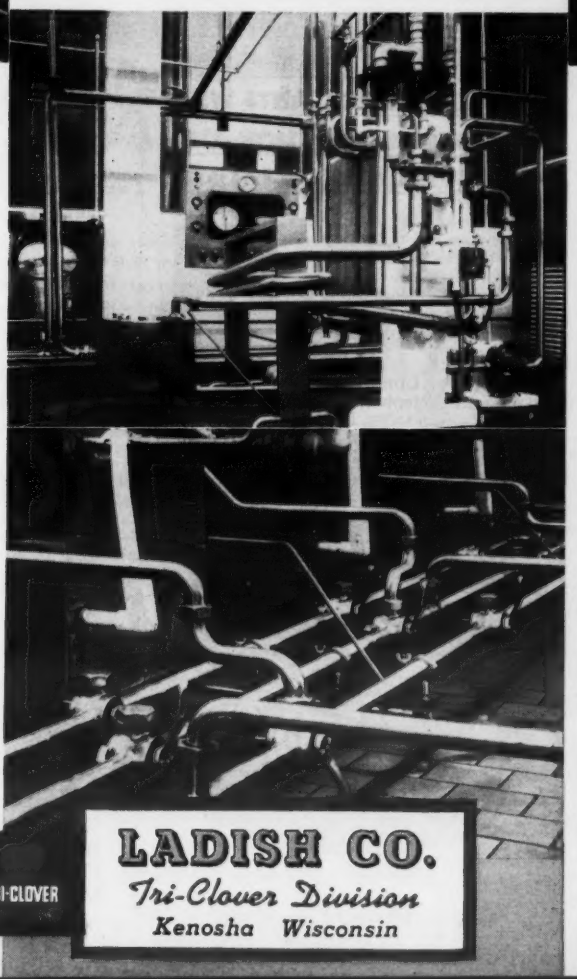
Wisconsin Alumni Research Foundation

Madison, has appointed Robert F. Prier assistant director of laboratories, and John J. Birdsall assistant to director of laboratories.

For more information on product at right, circle 6499 see information request blank opposite last page.



■**Above:** General view shows part of the welded lines at Safeway Stores' new ice cream plant in Oakland. **Directly below:** Welded holding tube assembly with other Tri-Clover fittings and valves. **Bottom:** Close-up view of some of the Tri-Clover rubber plug valves, Tri-Weld fittings and piping supports used in this Oakland plant.



SAFEWAY STORES' streamlined ice cream installation includes new TRI-CLOVER "TRI-WELD" Fittings and Rubber Plug Valves

Safeway Stores have long been known for modern self-service retailing and efficient operations. In keeping with these progressive methods, their new ice cream plant in Oakland, California, was carefully designed for "streamlined" processing.

As part of its flow design, Safeway installed numerous butt welded stainless steel liquid lines where Tri-Clover "TRI-WELD" welding fittings were used, together with Tri-Clover Rubber Plug Valves for directional control in this plant. These pipelines all were welded right in the plant with newly developed welding machines.

This is another good example of the way in which Tri-Clover fittings and valves "keep pace" with modern processing methods that are being developed by the country's leading dairy and food plants. Let our engineering department help plan your next processing or "C-I-P" installation. *See your nearest Tri-Clover Distributor.*

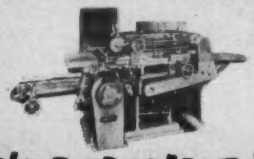
IN CANADA:
Brantford, Ontario

EXPORT DEPARTMENT:
8 S. Michigan Ave., Chicago 6, USA—Cable TRICLO, Chicago

TRI-CLOVER

LADISH CO.
Tri-Clover Division
Kenosha Wisconsin

S359



"WE RECOMMEND THIS LUBRICANT TO OUR CUSTOMERS"

—says PACKAGE MACHINERY COMPANY Springfield, Mass.

"We have found LUBRIPLATE Lubricants to be very effective and use them extensively in our machines. To assure the proper use of LUBRIPLATE Lubricants for re-lubrication, we place tags on our machines before shipment. Thus the purchasers of those machines know the LUBRIPLATE Product we recommend for each application and where to obtain it."

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE GREASE AND FLUID TYPE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE COSTS.

LUBRIPLATE is available in grease and fluid densities for every purpose . . . LUBRIPLATE H. D. S. MOTOR OIL meets today's exacting requirements for gasoline and diesel engines.

For nearest LUBRIPLATE distributor see Classified Telephone Directory. Send for free "LUBRIPLATE DATA BOOK" . . . a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.

6500 on Reader Service Slip.

sanitation

Non-porous, fast curing resurfacing material

Plastic flooring material may be used for completely new overlay or for repairing damaged floors. It is non-porous and suitable for sanitary installations.

Full details on its characteristics are presented in four-page bulletin. Folder also contains technical data on surfacer as well as three steps necessary for its application.

("A New Dimension in Your Floor's Future" may be obtained by writing the Stonhard Company Inc., Dept. 89, 401 N. Broad St., Philadelphia 8, Pennsylvania.)
6501 on Reader Service Slip.

Variable speeds at constant hp

Instead of constant torque, constant horsepower is delivered by variable-speed power transmission which has reduction ratio of 3:1 and capacity of 1½ hp at 1750 rpm.

Speed reducer is designed around a belt which has timing teeth on outside and truncated V-form on inside.

Timing teeth of TV belt engage driver on input shaft, thus providing constant fpm of travel. Belt, after passing over two idler pulleys, passes through a variable-pitch sheave which is mounted on the driven or output shaft.

Shafts of idler pulleys are mounted on two side plates and complete assembly can be rotated about axis of driver.

To increase speed, idler assembly is rotated away from variable sheave. V-belt is thereby drawn between faces of sheave, thus separating them and allowing belt to operate at smaller pitch diameter. To decrease speed, assembly is moved toward variable-pitch sheave and action is reversed.

Design maintains belt tension regardless of output ratio and thus provides constant hp at output shaft (with the exception of friction losses.)

Complete mechanical design and features of transmission are presented with illustrations in two-page catalog and four-page reprint. Detailed dimensions of speed reducer are illustrated in three-view mechanical drawing.

(Catalog and reprint on Model 19000 variable speed drive are available from Western Manufacturing Company, 3400 Scotten Ave., Detroit 10, Michigan.)
6502 on Reader Service Slip.

Turbine-pump motor features modern design

Design of motor follows relationship between form and function. Colored brochure explains and illustrates with cut-away drawings various design features.

Particular attention in 16-page bulletin is given to fast-filling lubricating system, weather protection, maintenance convenience, protective devices, balance and bearings.

("U. S. Holloshaft Pump Motors," Bulletin F-1953, is available from U. S. Electrical Motors Inc., PO Box 2058, Terminal Annex, Los Angeles 54, Calif.)
6503 on Reader Service Slip.

Lightweight cooler doors in different colors

Front and back sections of cold storage and refrigerator doors are molded of fibre glass-reinforced polyester resin. Insulation is foamed-in-place polyurethane plastic. It is four inches thick for cooler or freezer room service.

Four-page bulletin has actual color swatches attached which show the four colors in which plastic doors are available. Folder also contains detailed photographs and construction sketches.

("Jamison Jamolite Plastic Doors," Bulletin 5596, is available from Jamison Cold Storage Door Co., Hagerstown, Maryland.)
6504 on Reader Service Slip.

Have you changed your address recently?

● If so, you'll want to insure that your copy of FOOD PROCESSING reaches you without interruption. Just send us your new address . . . use the convenient form below.

Please answer all questions in regard to your new affiliation, and in addition give us your former address including company, city and state.

mail this request to
READER SERVICE DEPT.
FOOD PROCESSING
111 East Delaware Place
Chicago 11, Illinois

Former Company Affiliation .....

Former Address .....

Your Name ..... Present Title .....

Present Company .....

Main Product .....

Rating of Company .....

Street Address .....

City ..... Zone No. ..... State .....

Association News

Corn Products Company

has made annual unrestricted cash grants to 119 colleges and universities in recognition of the contribution made by the institutions to the company's success through training and education of its personnel. Contributions are determined on basis of number of graduates or undergraduates employed by Corn Products from the schools, and represent an addition to other company programs of financial aid to higher education which have been in practice for many years.

American Assn. for the Advancement of Science

has presented its annual AAAS Industrial Science Award to Armour and Company and Swift and Company, both of Chicago. The award recognizes company or companies which bring into significant practical application basic scientific discoveries.

American Institute of Baking

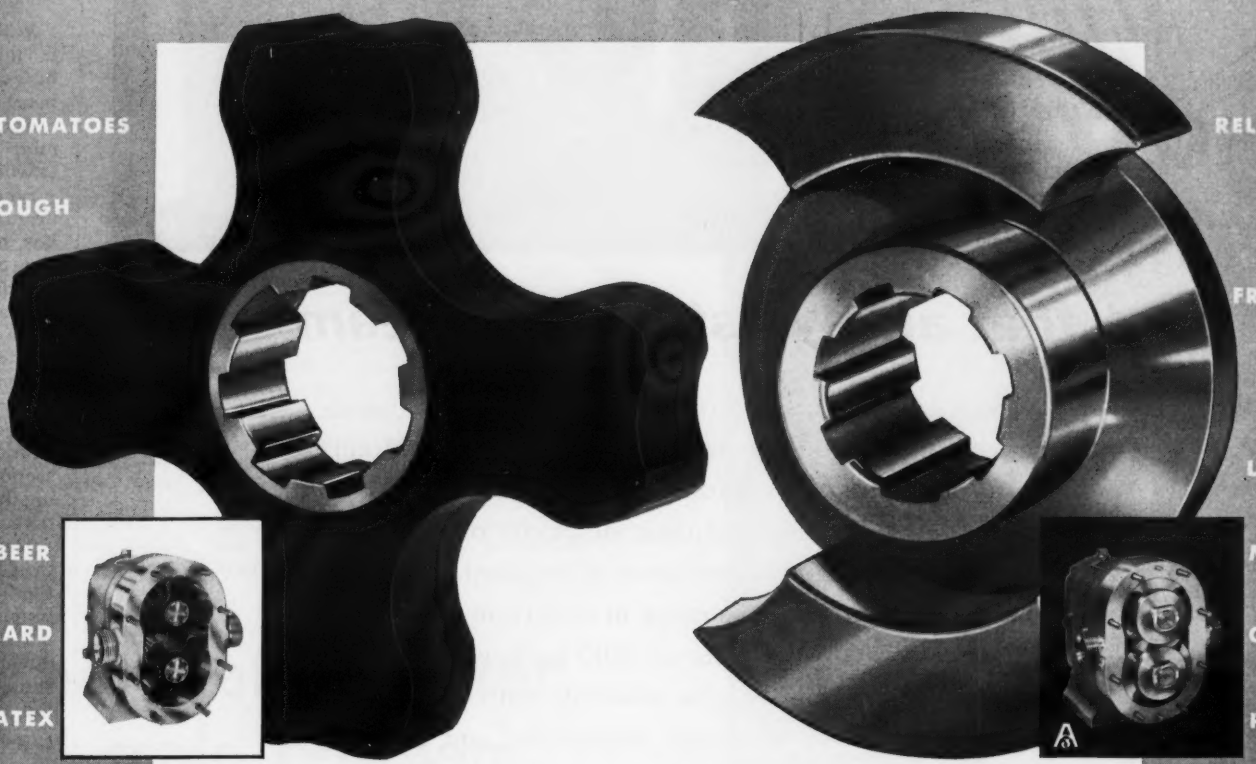
Chicago, has conferred honorary life memberships on these three members: Paul Chapman, board chairman of Chapman & Smith Company, Melrose Park, Ill.; Joseph A. Lee, formerly first vice president and a director of Standard Brands; and Dr. Robert R. Williams, the first to determine the chemical structure of and to synthesize thiamine. All three have been active as officers of or advisors to the AIB.

New president of the AIB is Arthur Vos, Jr., president of Macklem Baking Company of Denver. He succeeds Louis E. Caster, newly elected AIB chairman.

For more information on product at right, circle 6505 see information request blank opposite last page.

Which Pump is best for your Product?

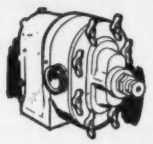
TOMATOES
DOUGH
BEER
LARD
LATEX
MILK
CHEESE
CORN SYRUP
FRUITS
CHEMICALS
LARD
STARCH
EGGS
SAUSAGE
LIQUID SUGAR
FROSTING
MAYONNAISE
COSMETICS
BABY FOOD
DOUGH
PAINT
LATEX
SAUSAGE
STARCH
GLUE
RELISHES
TOMATOES
PAINT
EGGS
LARD
MILK
GLUE
BEER
FRUITS
RELISHES

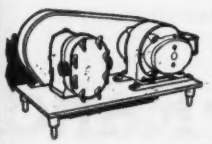


only WAUKESHA offers you a choice of rubber or metal impellers

Your product demands a *specific* size and type positive displacement pump. The proper selection is the most important factor in obtaining *maximum* pump life and the assurance that your plant keeps on stream — always.

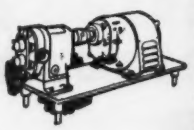
Only WAUKESHA offers you *more than* 500 positive displacement pump combinations . . . a type and size *specifically* engineered to handle your product. You select *exactly* what you need . . . no compromising — ever.



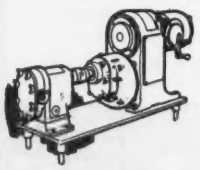


Only WAUKESHA offers you a choice of metal or rubber impellered pumps for capacities from 0 to 300 G.P.M.

Only WAUKESHA offers you corrosion-resistant pumps in both Waukesha Metal (nickel alloy) or 316 Stainless.



Only WAUKESHA provides the specialized engineering assistance built on more than 5 decades of experience in the design and manufacture of sanitary positive displacement pumps.



Representatives in all major cities. Call your distributor or write . . . Waukesha Foundry Co., Dept. 44, Waukesha, Wis.

WAUKESHA FOUNDRY COMPANY

The largest producers of sanitary positive displacement pumps

Two 30 horsepower multi-stage Motorpumps on boiler feed service.

MOTORPUMPS

. . . the pump

that always stays on stream

Where your process or production depends on movement of liquids, you can rely on Ingersoll-Rand Motorpumps for continuous, efficient pumping. Motorpumps are built for rugged service and their simplicity of design allows for easier, faster maintenance if required.

These close-coupled units range in sizes from ¼ through 75 horsepower . . . capacities to 3200 gallons per minute . . . heads to 650 feet. They're available with threaded or flanged suction and discharge connection and come in single, two or four stage models.

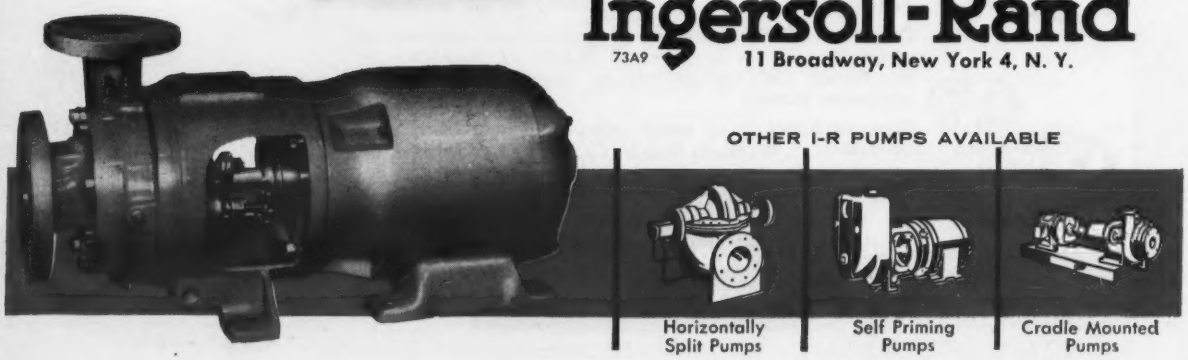
To learn how Motorpumps can solve your specific pumping problems, call on the specialist at your nearby I-R branch—or write direct. We'll design a unit for your specific applications if we can't meet requirements from our many standard models.

a century 1860 – 1960 *of pump progress*

from the leading manufacturer . . .

Ingersoll-Rand

73A9 11 Broadway, New York 4, N. Y.



6506 on Reader Service Slip.

maintenance

Over 300 pillow blocks, over 200 bearing takeups

With the addition of 74 sizes in three series, line of babbitted and bronze-bushed bearings takeups has been increased to over 200 sizes in more than 10 types. Size range extends to 5-15/16 in. diam.

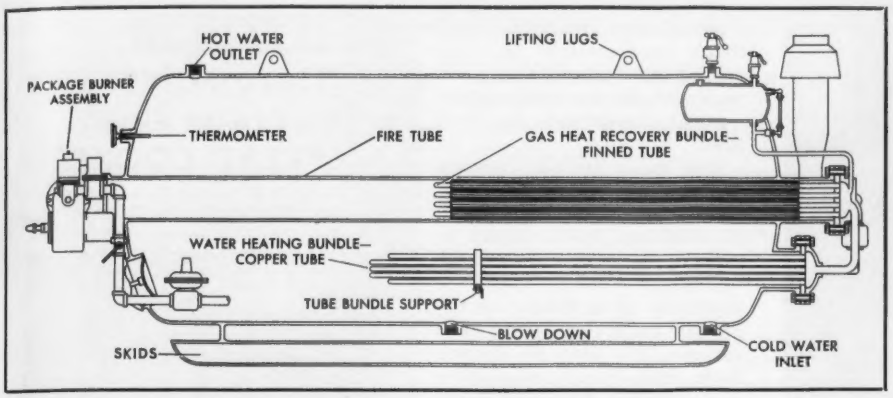
Line of babbitted and bronze bearing blocks also has been increased by addition of 45 sizes in five series. Off-the-shelf delivery is now available in over 300 sizes in more than 15 types for shafting up to 12 in. diam.

Complete lines of bearing blocks and takeups are presented in 16-page book. Publication is divided into two sections: one section for bearing blocks and the other for takeups.

Design features are illustrated and described for each type of block and takeup and, its class of application is given. Complete specifications, dimensions, weights and tables showing recommended loading ranges are also included.

("Babbitted and Bronze Bearing Blocks and Takeups," Book 2707 may be obtained by writing Link-Belt Company, Dept. PR, Prudential Plaza, Chicago 1, Ill.)
6507 on Reader Service Slip.

". . . and this is a high speed mixer . . ."



Gas-fired water heater has three basic systems: combustion unit, forced circulation heat transfer fluid and service-water system. Flame and gases enter fire tube which is surrounded by storage water. Combustion is essentially complete when hot gases reach finned fire-tube bundle, which projects into tube from draft-hood end and is actual working heat-transfer surface. Heat-exchange fluid, usually water, is pumped through a closed loop between tubular heat exchanger in combustion tube and tubular heat exchanger in service-water storage space

Design hot water heater to end scale problem

Water in "closed circuit" boiler transfers heat from flame to service water

Packaged water heater is ready for installation; need only be connected to gas and service-water pipes, flue vent and house current. Packless, water-lubricated pump—arrow—in pipe loop circulates heat-transfer water—see diagram

Scale is avoided in this indirect, gas-fired storage water heater by rapidly pumping a heat transfer fluid (water) through a closed circuit system between combustion tube and service water — instead of heating service water directly as is customary.

Since same heating medium is constantly recirculated in a totally enclosed (no oxygen) system, only comparatively minute amount of mineral matter contained in original charge of water in heat transfer loop is introduced.

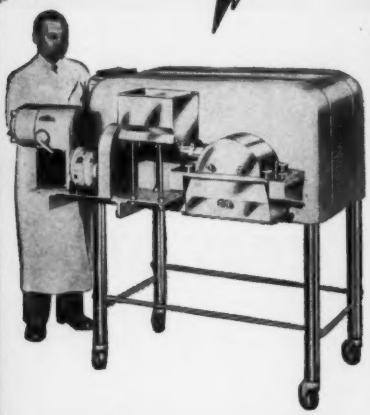
Further, since heat transfer between circulating fluid and service water is at lower temperature of 250 F than direct flame to-water arrangement, no precipitation of salts takes place in the service-water system. (Scaling depends upon mineral content of water and temperature to which water is heated.)

Hot water heater actually has three basic systems, see diagram.

Quiet, yet efficient combustion is achieved by nozzle-mixing burner which

(*Continued on next page*)

CAUTION
AGAINST CONTAMINATION
starts with
COG!



All product contact areas of the new Cog-Mill are of stainless steel, and quick and thorough cleaning is permitted by the EXCLUSIVE snap-apart design.

CHOPS
GRINDS
GRANULATES
PULVERIZES
solids, and
BLENDS

liquids and practically all solids to any desired consistency.

TEMPERATURE CONTROLLED PROCESSING

Models for variable speed manual or continuous feeding by 7½ to 20 H.P. motors.

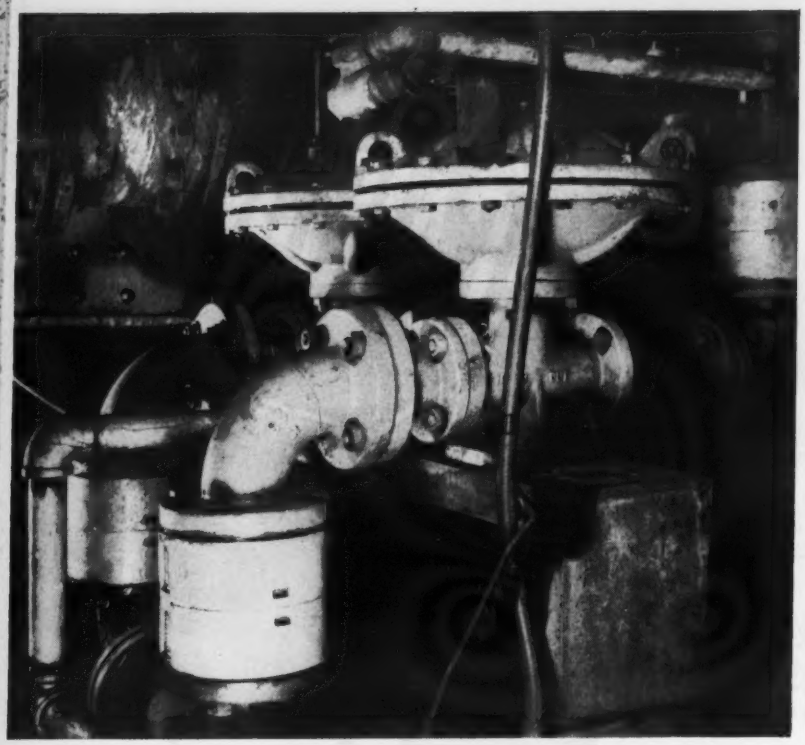
Send for details, designating product to be processed.

THE COG CORPORATION

Division of Motiograph, Inc. *Established 1896*
4389 W. Lake St. **Chicago 24, Ill.**

A. TORRES EXPORT, INC.,
2550 W. Peterson Ave., Chicago 45, U. S. A.

6508 on Reader Service Slip.



DORR-OLIVER ODS PUMPS PAY OFF *in hydraulic transfer of Granular Carbon*

At Refined Syrups & Sugars, Inc., Yonkers, N. Y., two rubber-lined 3" ODS Slurry Pumps, in split-flow, parallel arrangement, are the heart of a hydraulic handling system for granular carbon used as a decolorizing agent. They pump 25 to 30 GPM of a heavy, viscous slurry (1 lb. carbon per gal. 60 Brix syrup) at a velocity of 3 ft. per sec. in a vertical lift of 100 ft.

ODS Diaphragm-Type Pumps operate without mechanical linkage, so there is no stuffing box, no leakage. With no whirling action either, little particle degradation occurs. Installed over 18 months ago to meet an acute dust problem caused by handling carbon mechanically, the system has given complete satisfaction with a minimum of carbon attrition.

The ODS is one of three Dorr-Oliver pump types satisfying all food processing needs. For more information, write for complete catalogue to Dorr-Oliver Incorporated, Stamford, Conn.

ODS--Trademark Dorr-Oliver Incorporated

DORR-OLIVER

WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT

6509 on Reader Service Slip.

(*Continued from preceding page*)

is mounted at right angles to boiler.

Combination of design features produces high efficiency. Stack temperature is only around 300 F and CO_2 is a few tenths of one per cent of the-oretical maximum for fuel fired.

Hot water storage capacity can be picked to fit need; storage shells are available in 29 different sizes, ranging in capacity from 250 to 4000 gal.

Desired recovery rate—the capability of a heater to replenish hot water during peak periods—can also be chosen. Eight heat-transfer assemblies are available. Standard range is 375 to 2125 gph.

All water heating surfaces are constructed of copper. Surface inside steel storage section can be copper or special low-soluble cement.

(P-K Scalefree, Model 230 Storage Water Heater is a product of The Patterson-Kelley Co., Inc., East Stroudsburg, Pennsylvania.)
6510 on Reader Service Slip.

Circulating coolant beneath oscillating plate produces

High efficiency solids cooler

Uses-Features: Designed for cooling solids on a production basis, machine has high k-factor which for coarse materials is 18 Btu/hr/degree F/sq ft; for fine materials is 20.

High heat transfer is due to three factors. Entire cooling surface is always covered by material and motion of machine agitates product so that warm pieces are constantly being turned over against cool surface.

Motion also creates turbulence in cooling medium under plate. By breaking up laminar flow, insulating film next to plate surface is disrupted and heat transfer is thus improved.

Operation: At feed end of machine, horizontal circular motion is generated through

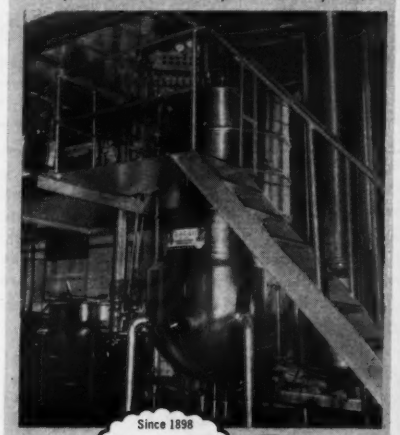
PROBLEM:

Produce Quality Spreads More Efficiently; Reduce Costs

SOLUTION:

Mojonnier VACUUM FRUIT SPREAD COOKER

Mojonnier 48" Vacuum Spread Cooker in plant of M. Polaner & Son, Newark, N.J. plant. Production line push-button operated.



Since 1898 Polaner and Son producers of the finest jams, jellies, preserves

The Mojonnier Fruit Spread Cooker brought these advantages to Polaner:

- IMPROVED FLAVOR—Since the product boils at 134°F, carmelization and burned tastes are eliminated. Gentle cooking treatment improves natural fruit appearance. Essence is recovered in condensate.
- UNIFORM COOKING—Steam heated inner jacket is designed for maximum heat transfer. Cooking under vacuum assures natural fruit color and flavor retention—permits faster sugar penetration.
- GREATER EFFICIENCY—Vacuum cooking is faster—push-button controls fill, empty or transfer product, using air valves. Solid stainless steel sanitary construction plus "in-place" cleaning guards against off-flavors. One 42" Cooker equals production of four, 100-gallon open kettles.

If higher production costs have cut your profits, check the low cost efficiency of the Mojonnier Fruit Spread Cooker.

Write: MOJONNIER BROS. CO.
4601 W. Ohio St., Chicago 44, Illinois

Mojonnier
QUALITY ENGINEERED FOR ECONOMY

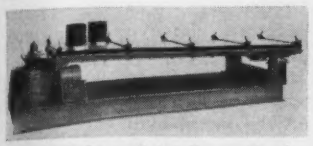
VACUUM FRUIT SPREAD COOKERS

Dependable Products . . . Backed by Dependable Service

6511 on Reader Service Slip.

counter balanced drive.

At discharge end, motion is translated into nearly straight-line motion by drag link mechanism. Thus material is distributed uniformly across width and full length of cooling surface as it is conveyed.



Dust tight and totally enclosed cooler can be opened in 3 minutes for quick and easy cleaning

Cooling medium can be any free-flowing liquid although water has been found sufficient in most applications. Coolant flows counter current to product through baffled water jacket. Rate of flow is from 10 to 15 gpm at about 12 psi.

Description: Coolers are made of stainless steel with smoothly polished surfaces and large radii corners.

Rate of conveying can be adjusted and machines can be mounted on floor, platform or suspended from overhead.

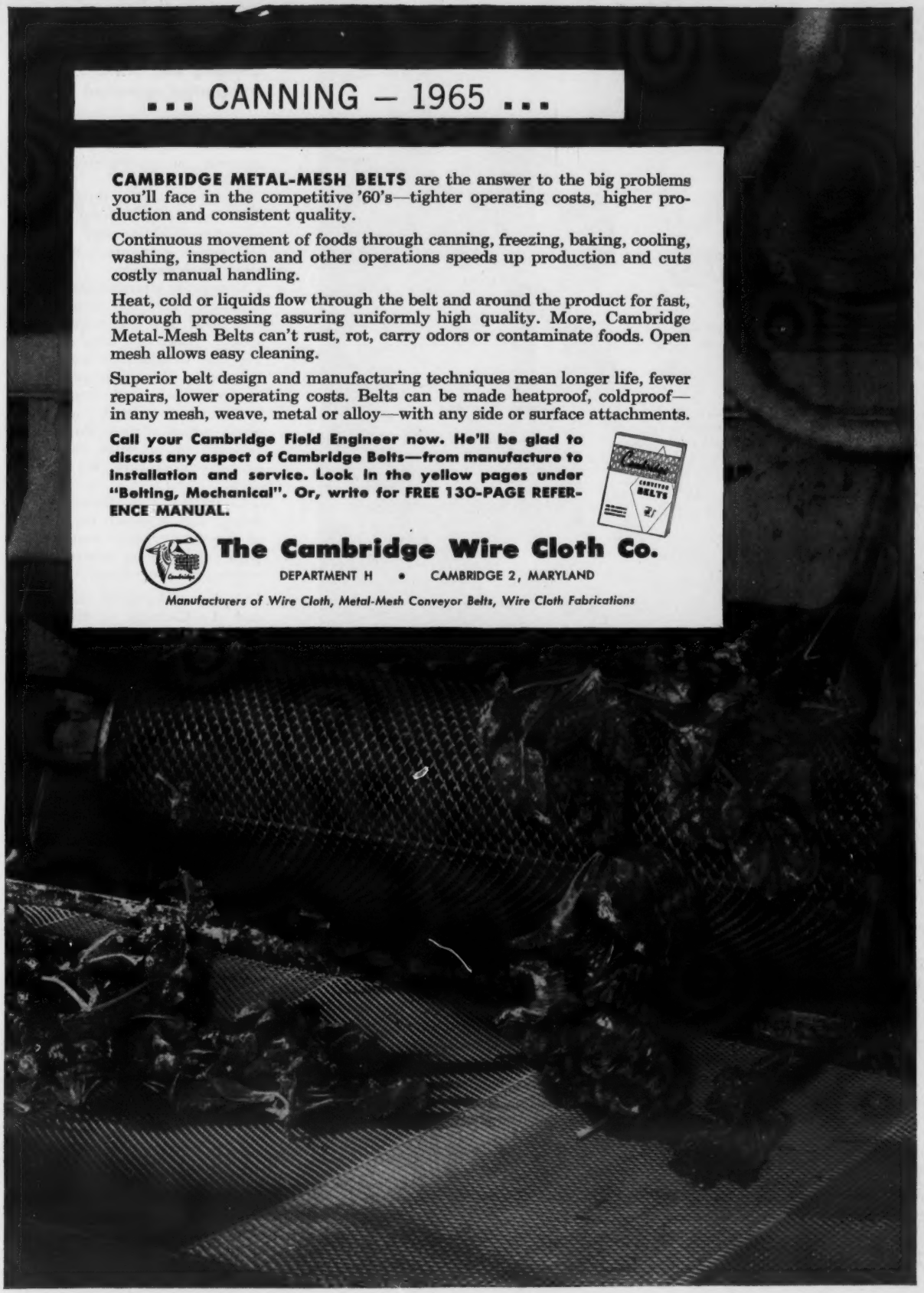
Two sizes of coolers are presently made. Smaller model has 15 sq ft of cooling surface and 2 hp motor, larger model has 30 sq ft surface and 3 hp motor.

(Rotex coolers are products of the Orville Simpson Company, 1230 Knowlton St., Cincinnati 23, Ohio.)
6512 on Reader Service Slip.

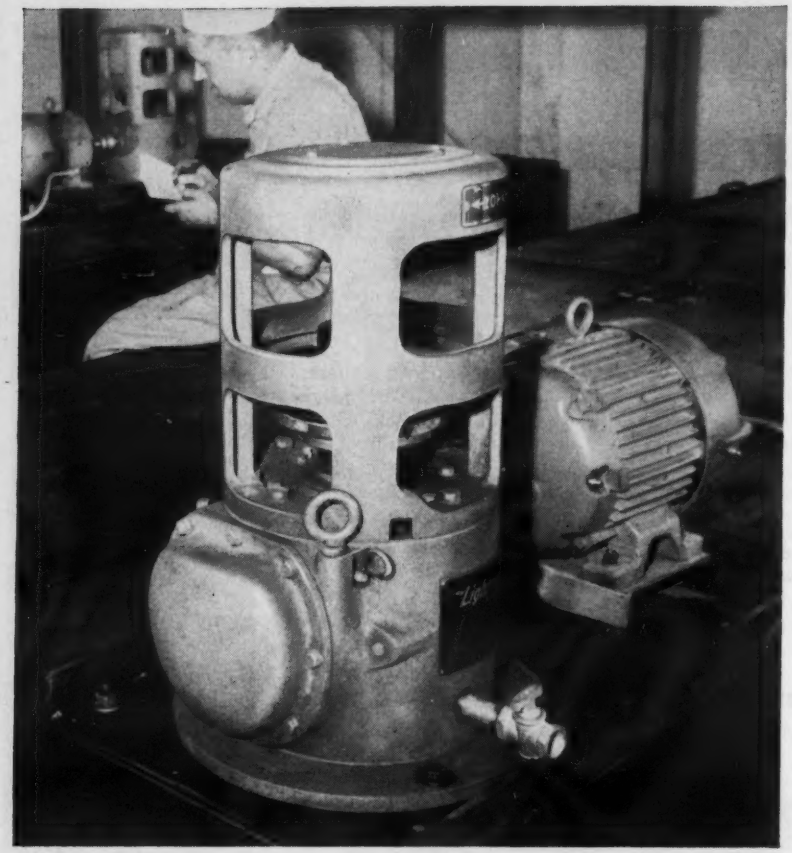
Improves design of roller dryers

Complete description of improved dryer is presented in eight-page bulletin. Materials of construction and mechanical features are illustrated and explained. Dimensions and production rates of various models are itemized in tabular form.

("Roller Dryers," Bulletin 570, may be obtained by writing the Blaw-Knox Company, Dairy Equipment Division, Mora, Minn.)
6513 on Reader Service Slip.


... CANNING – 1965 ...
CAMBRIDGE METAL-MESH BELTS are the answer to the big problems you'll face in the competitive '60's—tighter operating costs, higher production and consistent quality.
Continuous movement of foods through canning, freezing, baking, cooling, washing, inspection and other operations speeds up production and cuts costly manual handling.
Heat, cold or liquids flow through the belt and around the product for fast, thorough processing assuring uniformly high quality. More, Cambridge Metal-Mesh Belts can't rust, rot, carry odors or contaminate foods. Open mesh allows easy cleaning.
Superior belt design and manufacturing techniques mean longer life, fewer repairs, lower operating costs. Belts can be made heatproof, coldproof—in any mesh, weave, metal or alloy—with any side or surface attachments.
Call your Cambridge Field Engineer now. He'll be glad to discuss any aspect of Cambridge Belts—from manufacture to installation and service. Look in the yellow pages under "Belting, Mechanical". Or, write for FREE 130-PAGE REFERENCE MANUAL.
The Cambridge Wire Cloth Co.
DEPARTMENT H • CAMBRIDGE 2, MARYLAND
Manufacturers of Wire Cloth, Metal-Mesh Conveyor Belts, Wire Cloth Fabrications

6514 on Reader Service Slip.



Stirring chocolate for ice-cream coatings is a pushbutton operation at Ambrosia Chocolate Company, Milwaukee.

How to stir 37 tons of hot chocolate

This man is sitting on 37 tons of hot chocolate.

The chocolate has to stay hot—first here, then in heated tank trucks—until it gets to a customer's plant, where it will coat nearly two million ice-cream bars.

That means it has to be stirred so it won't settle or stick to the sides of the tank. It mustn't overheat, even around the edges. It must be ready to flow through a pipe fast enough to load a 30,000-lb. truck in 20 minutes.

LIGHTNIN Mixers like the one you see here have handled this critical job without a hitch for four years. There are 16 of them on big storage tanks throughout the plant.

In four years the mixers have needed no repairs—just normal maintenance. Their squat design allows for maximum tank height. The stainless turbine impellers are easy to clean.

You can get standard LIGHTNIN Mixers like these to handle your bigger mixing jobs in virtually any size of tank. They come as big as 500 hp and in hundreds of power-speed combinations. The mixing results are *unconditionally guaranteed.* For details, see your LIGHTNIN Mixer representative (listed in Thomas' Register).

Or write us.

Lightnin® Mixers
MIXCO fluid mixing specialists

MIXING EQUIPMENT Co., Inc., 132-b Mt. Read Blvd., Rochester 3, N. Y.
In Canada: Greey Mixing Equipment, Ltd., 100 Miranda Ave., Toronto 19, Ont.

6515 on Reader Service Slip.

Canning soft drinks . . . a technical appraisal

Ten-page brochure presents technical aspects of cans and canning of carbonated soft drinks.

Opening with a flow sheet of a carbonated beverage canning line booklet, after an introduction, presents a discussion on containers.

Container strength and carbonation, canning procedure and shelf life are treated at length. There is a table showing the relationship between maximum temperature and approximate maximum carbonation permitted, and a chart which shows the relationship of pressure to beverage temperature in 12 oz cans.

Literature also discusses in detail the internal corrosion of containers and concludes with a section on control and inspection procedures.

("Technical Aspects of Cans and the Canning of Carbonated Beverages" is available from American Can Company, 100 Park Ave., New York 17, New York.)
6516 on Reader Service Slip.

Automates production of cheddar cheese

Proven in operation since 1956, process makes every step from cooking to hooping of cheddar cheese automatic. Cheese made by this process will match others made by conventional method; has won top honors at state fair.

Process, which can be operated by one man, essentially has four components: rotating drum, hydraulic press, milling machine and conveyor.

After cooking, mixture of curds and whey is pumped from vat to rotating stainless drum which is finely perforated. As drum turns, cheddar curd is tumbled, freeing whey which falls through perforations into SS collecting pan below.

Curd drops from drum into a "block" on a hydraulic press where pressure is applied and held till desired acidity and moisture are attained. After forming and texturizing in the press hydraulic knives and piston cut and push 2 in. strips from press.

These strips (about 24 by 6 by 2 inches) are conveyed into milling machine. Milled particles fall into a screw conveyor in which curd is automatically salted by brine spray or dry salt.

Screw conveyor carries particles to hopper that empties into hoops. Pressing and ripening of cheese are performed in the usual manner.

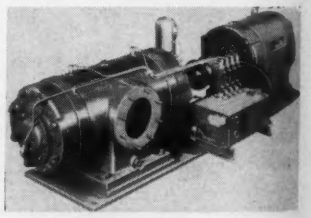
Four-page bulletin gives full description of process and lists benefits derived. It also presents specification diagram of complete process and photos of individual components.

("Ched-O-Matic," Bulletin S.A1110-5-59, is available from The De Laval Separator Company, Milk Plant Division, Poughkeepsie, N.Y.)
6517 on Reader Service Slip.

4 to 400 ton booster compressor

Uses: For low temperature applications in packing plants, dairies, cold storage warehouses or wherever freezing processes are utilized.

Features: Compressor will readily fit into multi-stage system as first or booster stage. It can be used with ammonia, Refrigerant 12 or 22.



Booster compressor is internally lubricated by mechanically driven force-feed lubricator

Machine has no reciprocating motion. Therefore vibration and shock are eliminated and operation is smooth and steady.

(VRB rotary booster compressor is produced by The Vilter Manufacturing Company, Milwaukee 7, Wis.)
6518 on Reader Service Slip.

Automatically cuts 1100 tidbits per minute

Frozen or compressed slabs of meat or other food products are rapidly cut into cubes by hydraulic cuber.

For cutting cubes to variety of different sizes, five interchangeable cutting heads are available. Continuous feed is automatic.

Eight-page brochure illustrates and discusses cuber as well as semi-automatic block slicer, automatic block slicer, and automatic frozen food slicer. Latter is designed for portion controlled slicing of steaks, patties or sticks.

Dimensions and details of all models are given.

("GMC Slicers," Brochure, is available from the General Machinery Corporation, Sheboygan, Wis.)
6519 on Reader Service Slip.

Up to 30 per cent less fish dust

100,000 uniform fish sticks per hr with gang-cutter

Features: Semi-automatic model slices 15 to 20,000 fish sticks per hour, requires one operator; fully automatic model slices 80 to 100,000 per hour, requires no operator.

Fish dust is caught in drawer and easily removed

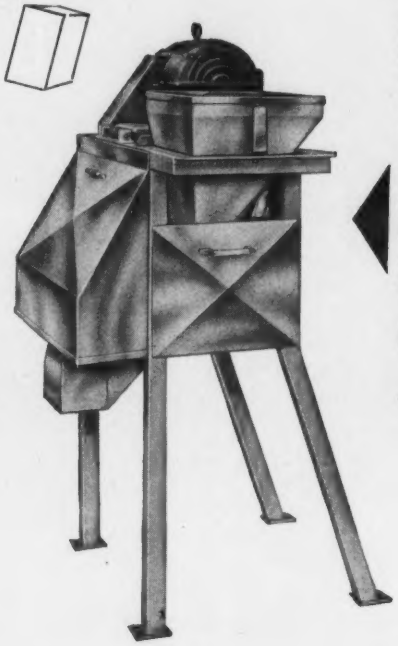
In both models, cuts are made by circular blades which are only 0.020 in. thick at cutting edge. Minimum thickness of slices (clearance between blades on gang-saw) is ½ in.

(*Continued on page* 109)

Versatility

is the big word for the Urschel Model **RA DICER, STRIP-CUTTER AND SLICER**

For Pickles, Vegetables, Fruits, Candied Fruits, Fruit Peel



The New Urschel Model **"RA" Dicer, Strip-Cutter and Slicer** gives you these *new* advantages: *widest range of cuts—from relish sizes of 1/16" x 1/8" x 1/8" to full 3/8" cubes, strip-cuts and slices ▶ more perfect dices than ever before ▶ operating speeds are quickly changed to provide the best dicing efficiency for various products and size cuts desired—means maximum capacity and higher quality cuts ▶ saves your valuable process syrups ▶ no product crushing—all the juice is locked in ▶ plugging is avoided by more direct product transfer from slicing to dicing knives ▶ stainless steel product contact surfaces ▶ one motor instead of two—mounted above operating parts for complete protection ▶ capacity up to 10,000 lbs. per hour*

The new "RA" Dicer replaces the model "R" unit in the Urschel line

Write today. Complete information promptly on request.

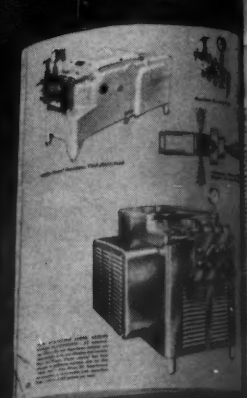
PRECISION HIGH-SPEED FOOD CUTTING EQUIPMENT

URSCHEL LABORATORIES INC.
VALPARAISO INDIANA

Designers and manufacturers of precision, high speed cutting equipment for food products

6520 on Reader Service Slip.

HOMOGENIZATION INSURES FLAVOR UNIFORMITY
IN DEL MONTE TOMATO CATSUP



Profitable Brands Start With Cherry-Burrell Processing Equipment

California Packing Corp. uses Cherry-Burrell Homogenizers to insure flavor uniformity in Del Monte Catsup.

Smooth. Even textured. Pours easy, too. On meats from steak to hot dogs, Del Monte Tomato Catsup is the flavor favorite of families throughout the country.

Pineapple distilled vinegar makes tomato flavor come alive in Del Monte Catsup — every bottle, every time. Cherry-Burrell Superhomo homogenizers are used to insure this flavor uniformity — smooth, even texture, too.

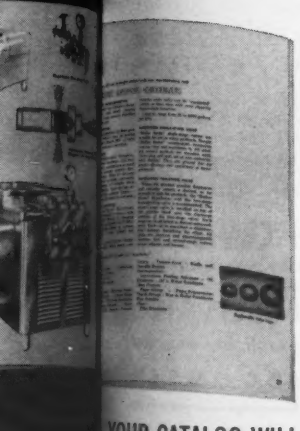
Superhomo homogenizers do the job so thoroughly there's no chance of liquid separation back to a pre-homogenized state. High-speed shearing action of homogenizing valve reduces pectin particles to equal size. Disperses particles, flavoring oils and other ingredients, evenly throughout the product.

In-plant profit, too. Hydraulic sealing for maximum wear. Pressure inside of cylinder block takes over during operation. Completely seals all gaskets. Gives longer gasket and plunger life. Low operating pressures cut down peak load demands, reduce wear on moving parts.

Another Cherry-Burrell product used extensively in the food industry is the Thermutator heat exchanger. Specially designed for use on heavy-bodied products, it heats to 350° F., cools to —50° F. without burn-on or freeze-on.

A Cherry-Burrell Sales Engineer will be glad to show you how these and other Cherry-Burrell products can help solve your processing problem. Call today. There's no obligation.

Equipment for homogenizing, heating, cooling, flavorizing, storing, separating, freezing, mixing, packaging and conveying.



CHERRY-BURRELL
CORPORATION
CEDAR RAPIDS, IOWA

FOR YOUR
FREE COPY OF CHERRY-BURRELL'S
FOOD PROCESSING
EQUIPMENT CATALOG
JUST WRITE US.
YOUR CATALOG WILL BE SENT BY RETURN MAIL.

6521 on Reader Service Slip.

(*Continued from page* 107)

Description: Fish are passed through hooded blades by chain pusher and kept in alignment during entire cutting action. Sticks are automatically spread and divided for breader and fryer by spreader-vibrator.

Blades are made of hard, chrome-plated steel.

Machines are built of stainless steel and are adjustable for different sizes of sticks and fish blocks. Speed of chain feed is adjustable by vari-drive motor. Semi-automatic cutter runs at 1700 rpm; automatic cutter at 3400 rpm.

Cutting table of machine lifts up for easy cleaning. Slicer requires 2½ by 3 ft of floor space; is 4 ft high.

(Rimco Multiple Slicing Machine is a product of the Rimbach Mfg. Co., Inc., 1659 W. 135th St., Gardena, Calif.)
6522 on Reader Service Slip.

How to choose defoamers

Details on what causes foaming and how costly foaming problems may be prevented are presented in an eight-page bulletin.

Publication explains how to choose proper defoamer for both, aqueous and non-aqueous systems. It also presents recommendations on equipment and methods to use in obtaining maximum performance from chemical defoamers. Techniques for easily evaluating effectiveness of defoamers for a specific system are included.

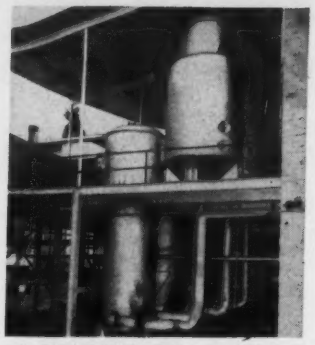
("G-E Silicon Antifoams," Bulletin CDS-204, is available from General Electric, Silicone Products Dept., Waterford, New York.)
6523 on Reader Service Slip.

GET CURRENT LITERATURE

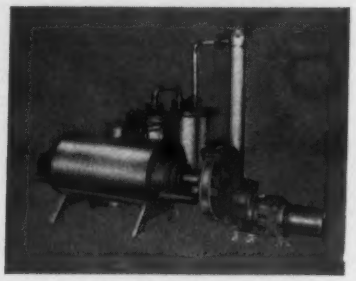
A quick reference to industrial literature available this month is given in the classified listing of new literature, page 115 of this issue. Check it now.

G-B

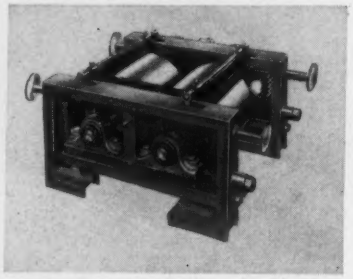
PROCESS EQUIPMENT



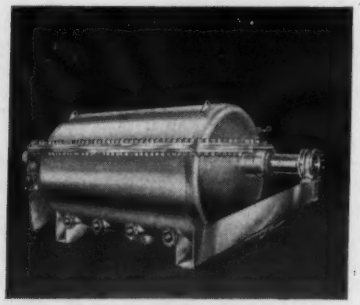
▲ EVAPORATOR — All stainless steel quadruple effect.



▲ VACUUM ROTARY DRYER — Designed for efficient removal of moisture at low temperatures.



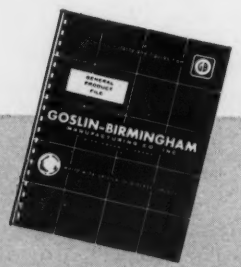
▲ DRUM DRYERS — Available with a variety of feed arrangements.



▲ FILTER — All stainless steel. Vallez rotating leaf pressure filter. Designed for precoat if required.

Goslin-Birmingham process equipment is custom designed to meet your specific requirements. The high standards of G-B design and workmanship assure you of maximum operating efficiency.

Write for more detailed information



GOSLIN-BIRMINGHAM
MANUFACTURING CO., INC.
P.O. BOX 631 • BIRMINGHAM, ALABAMA

FILTERS • EVAPORATORS • PROCESS EQUIPMENT • CONTRACT MANUFACTURING

6524 on Reader Service Slip.

processing

Continuous, rapid heat-transfer

Material to be chilled or heated is pumped through narrow, annular passage between heat-transfer tube and a rapidly revolving mutator shaft.

Action of the mutator shaft not only agitates material but also constantly cleans heat transfer surface. Dual action results in high heat-transfer rate with viscous and liquid products.

Numerous applications are listed and illustrated in four-page bulletin.

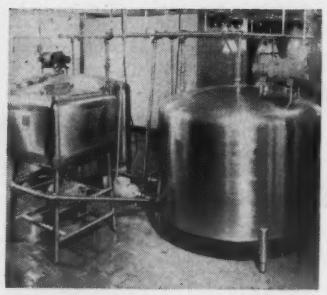
("Votator," Bulletin V249-5-1258, is available from the Girdler Process Equipment Division, Chemetron Corporation, Louisville 1, Ky.)
6525 on Reader Service Slip.

Quickly dissolves dry ingredients

Keeps UHT system on line all day

Problem: Liquefying of dry additives, such as stabilizers, chocolate granules, cocoa or dry skim milk, is often time consuming — can hold up continuous processing.

Solution: At Pure-Vac Dairy Products Corp., Memphis, Tenn., 75 gal liquefying unit generates hydrating action which dissolves powders quickly.



Liquefying machine is installed just ahead of mix assembly vat and empties directly into it

Skim milk powder goes into solution almost instantly in water; sometimes is combined

New Type Organic Chlorine Powder

KLENZADE

Tri-Chloro-Cide

Non-Corrosive for All Stainless Steel Processing Equipment

NO FILM
NO SEDIMENT

Sparkles in Hardest Water!

HIGH GERMICIDAL STRENGTH

Klenzade has greatly reduced the corrosion problem common to ordinary chlorine sanitizers with Tri-Chloro-Cide — a high powered stable chlorine powder that won't pit or corrode stainless steel. Tri-Chloro-Cide is an *organic* chlorine that produces a clear, sparkling solution of exceptional germicidal strength . . . even in hardest water! Tri-Chloro-Cide is perfect for fogging or rinsing. Leaves no film or sediment. Remarkably stable, quickly soluble, excellent shelf life.

MAKE EQUIPMENT SAFE WITH Tri-Chloro-Cide ORGANIC CHLORINE

KLENZADE PRODUCTS, INC.
Branch Offices Throughout America
BELOIT, WISCONSIN

6526 on Reader Service Slip.

with chocolate powder so that the two products are dissolved together.

Results: Machine completely dissolves 12 to 20 pounds of stabilizer in water or up to 150 lb of chocolate or cocoa powder in raw product.

Supplied straight from storage tanks, ingredients are ready to be pumped into mixing vat within 2 to 3 minutes. Speed is fast enough to keep UHT system running continuously.

(Lanco Likwifier is available from The Creamery Package Mfg. Company, 1243 W. Washington Blvd., Chicago 7, Illinois.)
6527 on Reader Service Slip.

Test titanium on sauces

Tank now undergoing six-month test for evaluation under actual operating conditions

Even though stainless steel Type 316 ELC tanks are used in sauce processing, average service life of tanks is only three years.

Laboratory tests of titanium showed that metal was unaffected by food or cleaning agents; did not affect taste or color of sauce.

Sauce tank under test is 38 in. high, has ID of 54 in. and capacity of approximately 300 gal. Over 300 lb of titanium sheet, plate and bar were used in its fabrication

Results encouraged next step: a production model for testing under actual operating conditions. Test will run for six months after which full evaluation will be made.

(Further information on titanium for food processing may be obtained from the Crucible Steel Company of America, PO Box 467, Midland, Pa.)
6528 on Reader Service Slip.

Intensive mixing by mulling

For dry or pasty materials, mulling breaks up agglomerates and mixes by kneading, smearing and spatulate action which coats one material with another.

Action of muller wheels makes machine suitable for blending where tempering, uniformity or intimate dispersion of relatively small amount of material to large mass is desirable.

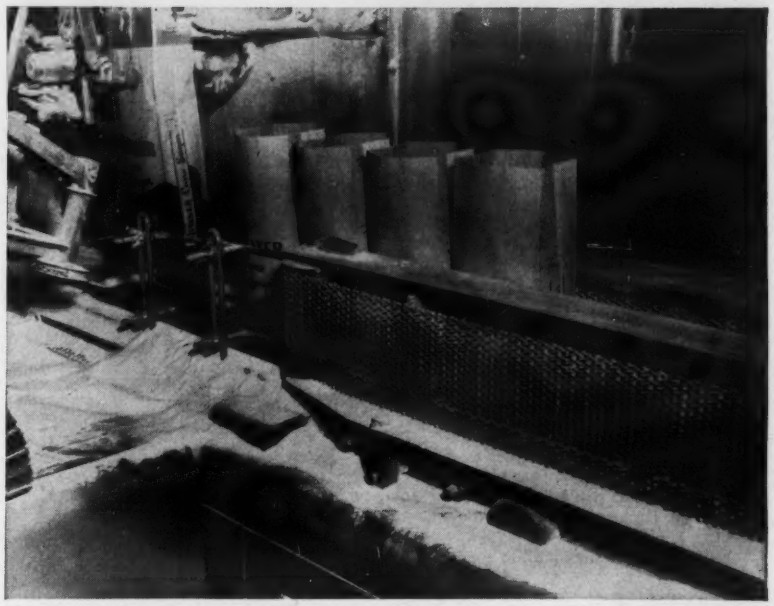
Charts and photos of 12-page bulletin explain controlled dispersion in detail. Specifications, capacity data and suggested uses are included.

Material-handling services and equipment, and chart having conversion data of weight vs volume are also presented.

("Handbook on Mulling," Bulletin 598-11M, is available from National Engineering Company, Dept. B, Machinery Hall, Chicago 6, Ill.)
6529 on Reader Service Slip.

"Fred Goober! Will you stop pestering me for a date!"

Continuous Processing Depends on Continuous Product Flow and...

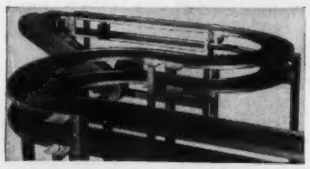


The Ashworth Balanced Weave B 36-32-16 shown above is used in sugar refining. These belts operate in the vertical rather than the horizontal plane, cushioning the containers to minimize breakage.

ASHWORTH KEEPS YOUR PRODUCT ON THE MOVE... CONTINUOUSLY!

No matter what *food* . . . meat, poultry, candy, fruit or produce . . . no matter what *process* . . . canning, freezing, deep frying, baking or packing . . . an Ashworth Metal Process Belt can help you reduce costs by assuring uninterrupted product flow during continuous processing.

Ashworth Metal Process Belts can be fabricated from any metal or alloy capable of being drawn into wire. Within this complete family of belts—both spiral weave *and* flat wire—of carbon steel or stainless steel—you can find the mesh or weave to meet any processing requirement.



Ashworth Metal Process Belts meet every demand of sanitation, heat, corrosion, drainage or direction of flow (Patented Ashworth OMNIFLEX Belts even go around corners).

Engineering, plus accurate selection of wire analysis, plus careful fabrication insure quality woven into every Ashworth belt. You can depend on Ashworth to carry the load . . . continuously.

Consult your nearest Ashworth Sales Engineer or write directly to:

ASHWORTH BROS., INC.
WINCHESTER, VIRGINIA
Sales Offices in Principal Cities

6530 on Reader Service Slip.

Easier food handling with Hackney Seamless Containers

More and more modern food processing plants use durable Hackney containers to cut handling costs. Here's why:

★ **Easy to clean**—with seamless construction.
★ **Easy to handle**—with stout welded handles.
★ **Easy to move**—with tough wearing ring on bottom.
★ **Easy to pour**—with a full-curled lip.
★ **Easy to select**—with a wide range of sizes in black, galvanized, tinned or stainless steel, or aluminum. Write for catalog.

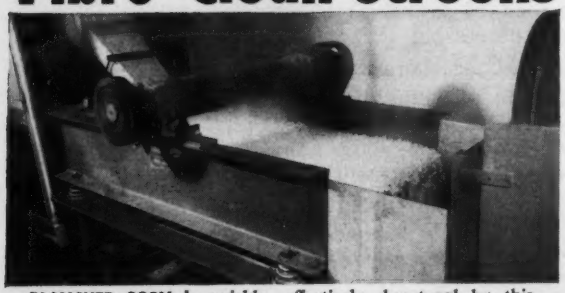
Hackney

Pressed Steel Tank Company
Manufacturer of Hackney Products
1459 S. 66th St., Milwaukee 14, Wis.
Branch offices in principal cities

CONTAINERS AND PRESSURE VESSELS FOR GASES, LIQUIDS AND SOLIDS

6531 on Reader Service Slip.

LINK-BELT Vibro-Clean screens



BLANCHED CORN is quickly, effectively dewatered by this Link-Belt Vibro-Clean screen at Oostburg, Wis. Canning Company. Corn is discharged directly to filling machines below.

- **Fast**
- **Thorough**
- **Sanitary**
- **Economical**

Link-Belt Vibro-Clean screens are the answer to fast, sanitary, low-cost cleaning and dewatering of food products. Absence of corners and crevices eliminates danger of bacteria build-up. High-speed vibration permits handling of extremely high capacities without blinding. Write for Book 2777. 14,625

LINK-BELT

VIBRO-CLEAN SCREENS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1; To Serve Industry There Are Link-Belt Plants and Sales Offices in All Principal Cities. Export Office, New York 7.

6532 on Reader Service Slip.

Cleaner birds at lower scalding temperature

With additive in poultry scalding water, oil removing and softening of feathers is made easier. Temperature of water can therefore be lowered, generally to range of 122 to 126 F.

Compound will facilitate picking feathers. Therefore, beaters can be adjusted so that birds receive fewer blemishes.

Compound is added to scalding water in ranges upwards of 1 lb to 250 gal, depending upon water hardness and amount of oil present.

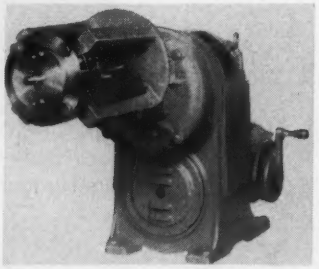
Additive is acceptable to Poultry Inspection Div. of USDA.

(Oakite P.S.C. is a product of Oakite Products, Inc., 127 A Rector St., New York 6, N.Y.) 6533 on Reader Service Slip.

Continuous mixer for lab, pilot plant

Continuous, automatic mixer, expressly designed to fit requirements of laboratory for research, experimental and small pilot plant work, is described and illustrated in 2-page bulletin.

Unit lends itself to continuous mixing processes of all kinds and is especially adaptable to multiphase systems. Nominal capacity range is approximately 30 to 180 pounds per hour.



Lab mixer model 4MV, shown here, is completely integral unit, including variable speed power drive

Bulletin shows two model mixers with different construction arrangements. One

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Shows how Pick Hot Water Heaters quickly and effectively solve hot water problems of many industries.

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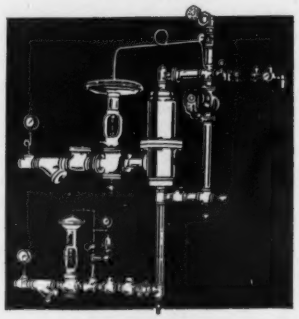

8 SIZES — 500 to 50,000 GALS. PER HOUR

Easily installed in steam and water lines. Usually attached to wall . . . no floor space required . . . no storage tanks necessary.

Volume adjustable from 5% to full rated capacity. Water temperature accurately controlled at any setting, with 20-second reaction to desired up-and-down changes. Operates on high or low-pressure steam.

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PICK MANUFACTURING CO., West Bend, Wis.

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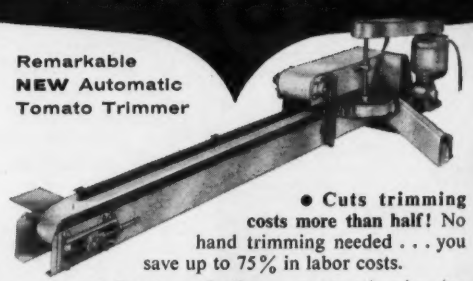
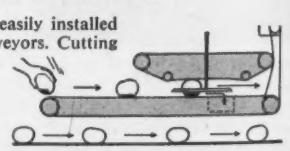
Remarkable **NEW** Automatic Tomato Trimmer



- **Cuts trimming costs more than half!** No hand trimming needed . . . you save up to 75% in labor costs.
- **Boosts production** . . . automatic trimming increases output many tons per hour.
- **Eliminates unnecessary product waste** . . . automatic trimmer pays for itself many times over.
- **Trims out black spots automatically.**

Tomato trimmer is easily installed on any existing conveyors. Cutting parts are made of stainless steel . . . the trimmer is easy to clean . . . easy to maintain.



Want more Details? Specifications? Prices? write:

F. H. LANGSENKAMP CO.
227 E. SOUTH ST. • INDIANAPOLIS 25, INDIANA

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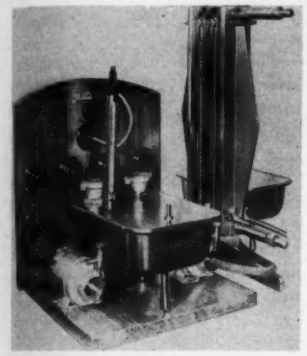
model has a bearing housing with shaft extension for belt drive from existing motors. Other model is available with variable speed power drive in three horsepower sizes to provide a completely integral unit.

(Continuous, automatic lab mixers, Models 4MBH and 4MV, are described in Bul No. 105, available from The E. T. Oakes Corporation, 26 Commack Rd., Islip, Long Island, New York.)
6536 on Reader Service Slip.

Lab model plate heat exchanger

Uses: Lab model plate heat exchanger can be used as a sterilizer, pasteurizer, preheater, regenerator, or cooler in exactly the same way as larger, production-size plate heat exchangers.



Lab plate heat exchanger occupies an area of only 2 feet 3 inches by 4 feet 7 inches

Features: A pressure plate, connecting plates and individual channel plates permit unit to be set up to handle various combinations of liquid circuit.

In place of hot water, steam can be used as a heating medium. Cooling is accomplished by use of chilled water or brine.

It can be cleaned and sanitized without disassembly by circulating a sanitizing or cleaning solution or steam through the system.

Description: Complete unit consists of a plate heat exchanger, a hot water set, cir-

(*Continued on next page*)

Solution . . . RHOZYME® DIASTATIC ENZYMES

If you're looking for a way to make the disposal of starch wastes easier, investigate the action of RHOZYME diastatic enzymes. These enzymes hydrolyze starch, and make it more soluble and more amenable to subsequent breakdown by microorganisms.

Facilitating waste disposal is only one of the many ways in which RHOZYME diastatic enzymes can be used industrially. Their liquefying, saccharifying, or modifying actions on starch are also useful in processes such as: **Processing of Precooked Cereals**—by permitting higher-solids processing without raising viscosity and thereby increasing drum-dryer capacity. **Recovery of Sugar from Candy Scrap**—by liquefying the starch and thereby permitting color and flavor removal at higher solids levels. **Production of Corn Sirup**—by saccharifying corn starch to make sweet, non-bitter sirups. **Bread-Making**—by modifying bread starch for better texture, grain, and shelf-life. **Production of Chocolate Sirups**—by lowering viscosity so that high-solids sirups pour readily.

Additional uses include . . . preparation of fermentable sugars from grains, corn, or potatoes . . . any type of starch conversion where high concentrations of maltose and dextrose are desired . . . starch modification for paper coatings and adhesives . . . and the production of cold-swelling laundry starch.

Write to Dept. SP-25 for samples and technical literature.

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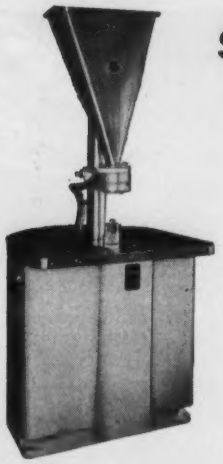
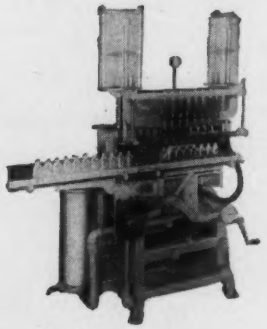


VACUFLOW Single Head Powder Filler Model D. This single head machine is designed for economic powder filling operations. Containers are manually placed in position by the operator, who presses two buttons, one with each hand to start the filling cycle. Air is removed from the container to create a vacuum which draws a measured quantity of powder from the hopper. There is no problem of dust control since method does not involve air currents which cause dust. Models available for filling sizes ranging from tiny talcum box up to 100 lb. paper bags and 200 lb. drums.



SAMCO JR. Vacuum Filler. A semi-automatic unit for filling a variety of liquids into a wide range of container sizes. Very simple to adjust, this machine is ideal for the bottler with short runs on several products. Handles 1-ounce to 1-gallon sizes.

Semi-Automatic Air Cleaner. Two head machine for air cleaning new glassware. Attendant lightly presses necks of inverted bottles into self centering tapered seals, and the air nozzles emerge well up into the bottles to release a blast of filtered dry air at 60 pounds pressure. Speeds — 20 to 50 per minute.

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(*Continued from preceding page*)

culating pumps, product container and a panel board.

Operating capacities are from 200 to 1000 pounds per hour, depending upon product and function. Heat exchanger has a maximum operating pressure of 74 psi and a maximum operating temperature of 284 F.

Plate dimensions are 3½" by 25⅝", with 46 sq in. of heat exchange surface per plate.

(Lab Plate Heat Exchanger, Model PL-1, is available from The De Laval Separator Company, Poughkeepsie, N. Y.)
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Smooth, chemically-inert, glass-lined storage tanks are made in wide range of capacities in two grades of glass-steel.

Tanks intended for corrosive service up to 125F are made from 500 to 20,000 gal capacity and are tested with low voltage for pin points.

Tanks which are visually inspected are suitable for neutral products in installations where ease of cleaning and non-contamination are of major importance. They are made in 500 to 35,000 gal capacity.

Six-page bulletin offers descriptive data, lists typical applications and physical specifications of tanks.

("Gladsteel Chemstor Tanks," Bulletin 975, is available from The Pfaudler Co., division of Pfaudler Permutit, Inc., 1097 West Ave., Rochester, N.Y.)
6542 on Reader Service Slip.

See Page 115

for handy, classified listing of new technical literature

- **Equipment**
- **Ingredients**
- **Supplies**

new literature

Classified Listing

Equipment

Ingredients

Supplies

Starred* items below have been more extensively reviewed elsewhere in the magazine. Items followed by (†) indicate literature offered by advertisers. Key number in the last line will help locate these reviews, which are numbered in sequence.

Processing Equipment, Accessories

Fast, sanitary, low-cost cleaning and dewatering of food products†, (Book 2777) Link-Belt
6543 on Reader Service Slip.

Corrosion resistant processing equipment†, (Bulletins) Lee Metal Products
6544 on Reader Service Slip.

Steam injection hot water heaters†, (Free Bul) Pick Manufacturing Co.
6545 on Reader Service Slip.

Cheese making automated*, 4 pp, (Bul S. Al110-5-59) DeLaval Separator Co.
6517 on Reader Service Slip.

Produce dried milk in flake or powdered form*, 8 pp, (Bul 570) Blaw-Knox Company, Dairy Equipment Div.
6513 on Reader Service Slip.

Foaming problems and their solutions*, 8 pp, (Bul CDS-204) General Electric Co.
6525 on Reader Service Slip.

Hydraulic slicers and cubers for frozen meat and other food products*, 8 pp, (Brochure) General Machinery Corporation
6519 on Reader Service Slip.

Mixing by mulling*, 12 pp, (Bul 598-11M) National Engineering Company
6529 on Reader Service Slip.

Continuously cools or heats and mixes*, 4 pp, (Bul V24R-5-1258) Girdler Process Equipment Div. Chemetron Corp.
6523 on Reader Service Slip.

No contamination, easy cleaning with glass-lined storage tanks*, 6 pp, (Bul 975) The Pfaudler Co., Div. Pfaudler Permutit, Inc.
6542 on Reader Service Slip.

For better understanding canning of carbonated soft drinks*, 10 pp, (Brochure) American Can Company
6516 on Reader Service Slip.

(*Continued on next page*)

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(*Continued from preceding page*)

Spray nozzle application ideas for low cost, better production*, (Cat 24) Spraying Systems
6548 on Reader Service Slip.

Ingredients, Food Additives

Line of cane-corn sweeteners for individual production requirements, 12 pp, ("New Ingredients" Brochure) Refined Syrups & Sugars, Inc.
6393 on Reader Service Slip.

All the facts about guar gum*, 16 pp, Stein Hall & Co., Inc.
6388 on Reader Service Slip.

Summarizes current Federal regulations governing use of antioxidants in food products*, 26 pp, (Cat No. G-109) Eastman Chemical Co.
6385 on Reader Service Slip.

Citric acid from cane blackstrap molasses†, (Informative lit) Bzura Chemical Co., Inc.
6549 on Reader Service Slip.

Packaging, Labeling, Cartoning

Set-up machine for corrugated boxes is semi-automatic*, 4 pp, (Brochure) Gaylord Container
6398 on Reader Service Slip.

Air-powered tensioners and sealers for steel strapping applications, 4 pp, (Bul SPD-216) Signode
6550 on Reader Service Slip.

Air-power, recoiless, production line stapler, 4 pp, Paslode Co.
6551 on Reader Service Slip.

Wrapping unit for single or stacked cakes, cookies, sweet goods, 2 pp, Crompton & Knowles
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High-efficiency, low-investment, single-operator tuck-end cartoning, 4 pp, F. B. Redington Co.
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"Polyflex" oriented polystyrene sheet and film, approved by FDA for packaging food products, 6 pp, Plax Corp.
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Hand-, foot pedal- and power-operated thermal-impulse heat sealers, 12 pp, Vertrod Corp.
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Bulk Handling, Accessories

Case histories on progress in bulk handling with pneumatic equipment*, 8 pp, (Technical Report ER-G-6) Fuller Company
6426 on Reader Service Slip.

Stainless steel tubs, trucks, drums†, (Cat) The Standard Casing Co.
6556 on Reader Service Slip.

Seamless containers for food handling†, (Cat) Pressed Steel Tank Co.
6557 on Reader Service Slip.

Permaglas Mechanized Storage Structures†, (Bul MU-100) A. O. Smith Corp.
6558 on Reader Service Slip.

Conveyors, Racks, Accessories

Standards and specifications on solid cotton belting*, 18 pp, (Handbook) Woven Fabric Belting Manufacturers Association
6433 on Reader Service Slip.

Continuously weighs and feeds over 1½ ton per minute*, 4 pp, (Bul 35.20-2) B-I-F Industries, Inc.
6421 on Reader Service Slip.

Roll-away trucks†, (Cat) Midwest Metal Stamping Co.
6559 on Reader Service Slip.

Quick view of complete line of feeding, cooling, conveying, drying equipment for the process industries, 12 pp, (Cat 978) Jeffrey Mfg. Co.
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Vibrating dryers, heaters, coolers, conveyors and auxiliary equipment, 32 pp, (Cat 953) Jeffrey Mfg. Co.
6561 on Reader Service Slip.

Belt conveyor idlers and pulleys, 72 pp, (Bul 5980) Chain Belt Co.
6562 on Reader Service Slip.

Roller chain with snap-on top plates of black nylon, 4 pp, (Bul 57-12) Chain Belt Co.
6563 on Reader Service Slip.

Nylon table-top conveyor chains in 3¼ and 4½ in. widths, 4 pp, (Bul 58-65) Chain Belt Co.
6564 on Reader Service Slip.

Mobile stacker-conveyors with self-powered elevating device, reversible belt movement, folding-for-storage feature, 2 pp, (Bul 133A) Hytrol
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Mobile belt conveyors adjustable in height for handling anything from granular material to cartons, 2 pp, (Bul 453) Bosworth Mfg. Co.
6566 on Reader Service Slip.

Fork Trucks, Accessories

How to be a good driver of industrial trucks*, 20 pp, (Instructors Manual) Yale & Towne Manufacturing Company, Div. Automatic Transportation Co.
6430 on Reader Service Slip.

Controls, Regulators, Indicators

Pocket-size handbook on hydrostatic instrumentation*, 88 pp, Petrometer Corporation
6473 on Reader Service Slip.

Electronic sensing control detects, measures without physical contact*, 2 pp, (Bul 400) Security Controls, Inc.
6469 on Reader Service Slip.

A full range of instruments for measuring, recording, testing*, 48 pp, (Cat G-10) Minneapolis-Honeywell
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Integral simplicity in continuous remote tank gauging†, (Bul L-10) The Meriam Instrument Company
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Select a control best suited to your operation†, (14 bulletins available on: Time Switches, Program Clocks, Cycle Repeaters, Time Delay Relay, Auto-Lawn Sprinklers, Liquid Level, Milk Level, Nonconductive Liquid, Automatic Reset, Ice Thickness, Boiler Level, Motorize Sanitary Valves, Interval Timers and Photo-electronic Relays-Counters, etc.) Lumenite Electronic Co.
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Absolute pressure d/p cell transmitter with full-power 3 to 15 psi signal†, (Bul 458-22A) Foxboro
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Batch-weighing systems for accurate reproduction of bulk material formulations†, (Bul 14) Weighing & Control Components
6570 on Reader Service Slip.

Laboratory Instruments, Accessories

Commercially practical preparative gas chromatograph*, 4 pp, Beckman
6484 on Reader Service Slip.

Continuous, automatic mixer for lab, pilot plant*, 2 pp, (Bul No. 105) E. T. Oakes Corp.
6536 on Reader Service Slip.

Catalog lists 21 lab instruments*, 12 pp, (Bul 757) Beckman
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Upgrading profits with a refractometer†, (Cat D-280) Bausch & Lomb Optical Co.
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Sanitation

Ultrasonic cleaning*, 4 pp, (Bul 16A) Oakite Products, Inc.
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Maintenance

Lists over 500 pillow blocks and takeups*, 16 pp, (Book 2707) Link-Belt Company
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Insulation has low thermal conductivity, many applications*, 6 pp, (Bul C-9-271) Koppers Company, Inc., Plastics Div.
6495 on Reader Service Slip.

Vertical pump motors for outdoors service*, 16 pp, (Bul F-1953) U.S. Electric Motors Co., Inc.
6503 on Reader Service Slip.

Plastic cooler doors in color*, 4 pp, (Bul 5596) Jamison Cold Storage Door Co.
6504 on Reader Service Slip.

Constant hp speed reducer*, (Cat & reprint) Western Manufacturing Company
6502 on Reader Service Slip.

Floor resurfacer for new or old floors*, 4 pp, (Folder) Stonhard Company, Inc.
6501 on Reader Service Slip.

A treatise on lubrication†, (Lubriplate Data Book) Lubriplate Div., Fiske Brothers Refining Co.
6572 on Reader Service Slip.

Chain lubricant cleans while it lubricates†, (Bul F-10347) Oakite Products, Inc.
6573 on Reader Service Slip.

Piping, Pumps, Valves, Accessories

Accurate regulation with sliding gate diaphragm control valves, 8 pp, (Bul J-170) OPW-Jordan
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Quick-cleaning pump even pumps suspended solids†, (Bul 34 FP) Robbins & Myers, Inc.
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Chemically resistant, all-plastic piping system*, 16 pp, (Bul CE-80) Amerace Corporation, American Hard Rubber Company Div.
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Stainless steel pump pumps liquids, semi-fluids direct from drum†, (Free literature) Gray Company
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Case history on processor's use of clear, flexible, nontoxic food and beverage hose†, 28 pp, (Bul T-100) U.S. Stoneware
6577 on Reader Service Slip.

Miscellaneous

Insulations and insulating methods for proper air barrier in refrigerated truck bodies and trailers*, 12 pp, Armstrong Cork
6445 on Reader Service Slip.

Fast chilling of carriers with CO_2*, 4 pp, (Brochure) Pure Carbonic Company, Div. Air Reduction Company, Inc.
6450 on Reader Service Slip.

Pros and cons of leasing equipment for smaller manufacturers*, 20 pp, Foundation for Management Research
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Packaging Machines, Inc.
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Identity Standards

(*Continued from page 37*)

cumbersome legal technicalities arising from the present standards. The best interest of society would not be served. This statement still holds.

The 1958 Food Additives Amendment should take care of the question of safety under the proposed conditions of use of a new food ingredient. The delay, and cost of such delay, still encountered because of the further requirement to seek an amendment to the food standards, even under the Hale Amendment, is beneficial to neither the consumer nor industry.

The consumer is entitled to the nutritional and economic benefits of an improved food just as soon as safety is assured. It is difficult to see how the additional procedure of standards amendment adds to the safety or prevents debasement of the integrity of a standardized food under present circumstances, when only the prescribed use of acknowledged safe ingredients is involved.

The cost of this duplication of effort and the delay in satisfying these legal technicalities may make the final cost of the improved food uneconomical to the consumer. Merely adding this cost to the price to the consumer would be inflationary because it is an unnecessary cost.

Under present conditions, an industry is quite reluctant to expend its time and money on research for the improvement of standardized foods. (In a few short years, we may well become a nation eating grandmother's foods — in spite of technological advances that have been made or could have been made under less cumbersome standards.)

Industry spends its time and resources on developing nutritionally beneficial and economical improvements in its products. Why hamper this inventiveness and ingenuity in nurturing a more efficient utilization of our food supply by maintaining food standards that have become outmoded?

I cannot help but endorse the principles expressed in Mr. Markel's proposal for a re-evaluation of the foods standards program. ■

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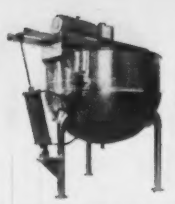

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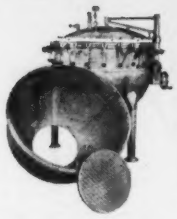

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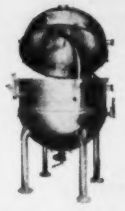

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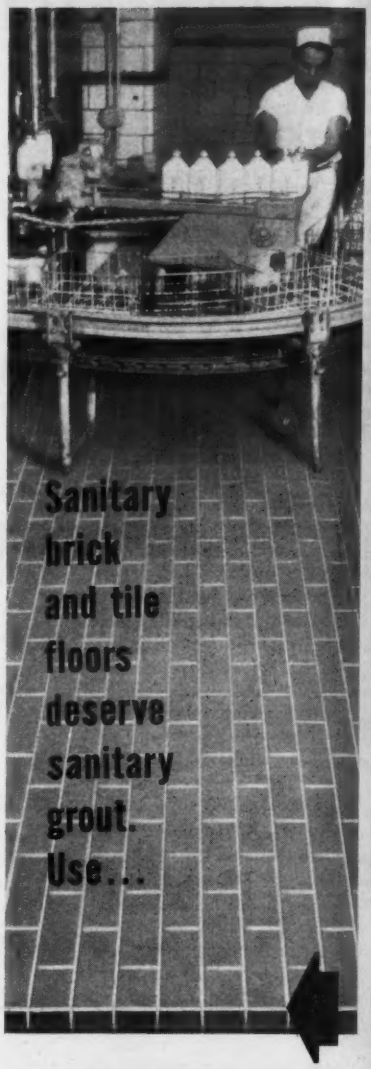

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Association News

American Assn. for the Advancement of Science

has presented the AAAS-Campbell Award for Vegetable Research, consisting of $1500 and a bronze medal, to Dr. Charles M. Rick, Jr., Professor of vegetable crops on the Davis campus of the University of California, for basic research on the biological relationships of cultivated tomato varieties and their wild relatives. The Award, established two yr ago by Campbell Soup Company, is granted for an outstanding single research contribution of either fundamental or practical significance, relative to production of vegetables for processing purposes.

National Confectioners Association

Chicago, has appointed Victor H. Gies, retired sales and advertising vice president of Mars, Inc., to head the newly formed public relations committee of the NCA. The committee will work to develop and execute a major public relations effort for the candy industry, emphasizing the positive values of candy.

Brewing Industries Research Institute

Chicago, has initiated a new project study of the carbohydrates in beer, with particular attention being given to the gums and pentosans (significant carbohydrates in beer). The new project, eleventh so far undertaken by the Institute since its founding in 1952, will be located at the Department of Agricultural Biochemistry, University of Minnesota. The Institute also has formed a new committee, the Brewing Applications Committee, for purpose of developing practical applications of research project findings.

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